Building Permit Application
City of Portland, Oregon - Bureau of Development Services

1900 SW 4th Avenue, Portland, Oregon 97201 • 503-823-7300 • TTY 503-823-6868 • www.portland.gov/bds

Required Fields Highlighted

Type of work (REQUIRED)

☐ New construction ☑ Addition ☑ Alteration
☐ Demolition ☐ Other:

Category of construction (REQUIRED)

◯ **Residential**: 1 & 2 Family Dwellings ◯ **Commercial**: Apartments/Condos ◯ **Commercial**: Other
◯ **Residential**: Other ◯ **Commercial**: Business/Industrial

Job site information and location

Job Address: 12000 SW 49th Avenue
City/State/ZIP: Portland, OR 97219
Suite/bldg./apt. no.: | Project name: PCC SY-HT Building West Side Renovation
Tax map/parcel no. **R#**

Provide Land Use or associated Permit Number (if applicable)

Description of work (REQUIRED)

This project is a major remodel to the existing Health Technolo

◉ Property owner or ◯ Tenant (REQUIRED)

Name: Portland Community College | Phone:
Address:
City/State/ZIP:
Email:

Owner installation: This installation is being made on property that I own.

Owner signature: Date:

☐ Contractor

Business name: Fortis Construction Inc | Phone: (503) 459-4477
Address: 1705 SW Taylor St STE 200
City/State/ZIP: Portland, OR 97205
Email:
CCB lic. no. 155766

Authorized signature:_____
Print name: Date:

◉ Applicant or ◯ Contact Person (REQUIRED)

Business name: Woofter Bolch Architecture
Contact name: Willis DeWitt
Address: 107 SE Washington St STE 228
City/State/ZIP: Portland, OR 97214
Phone: (803) 730-1681
Email: willis@woofterbolch.com

Authorized signature:_____
Print name: Willis DeWitt | Date:

Office Use Only

OFFICE USE ONLY

Required Data: One and Two Family Dwelling

Permit fees are based on the value of the work performed. Indicate the value (rounded to the nearest dollar) of all equipment, materials, labor, overhead, and the profit for the work indicated on this application.

Valuation (REQUIRED):	
Number of bedrooms:	
Number of bathrooms:	
Total number of floors:	
New dwelling area:	square feet
Garage/carport area:	square feet
Covered porch area:	square feet
Deck area:	square feet
Other structure area:	square feet

Required Data: Commercial Use

Permit fees* are based on the value of the work performed. Indicate the value (rounded to the nearest dollar) of all equipment, materials, labor, overhead, and the profit for the work indicated on this application.

Valuation (REQUIRED):	$3,165,000	
Existing building area:	203,540	square feet
New building area:	213,115	square feet
Number of stories:	3	
Type of construction:	Type II-A	
Occupancy groups		
Existing:	A-4, A-3, B, S-1	
New:	A-3, B, S-1	

Notice

Work related to this Building Permit may be subject to regulations governing the removal, handling, and/or disposal of asbestos and/or lead-based paint. For asbestos concerns, contact DEQ at 1-888-997-7888 For lead-base paint concerns, contact Oregon Health Authority at 971-673-0440.

All contractors and subcontractors are required to be licensed with the Oregon Construction Contractors Board under ORS 701 and may be required to be licensed in the jurisdiction in which work is being performed.

This permit application expires if a permit is not obtained within 180 days after it has been accepted as complete.

Disclaimer: By signing this application, the permit applicant acknowledges and agrees that they have obtained any required permission for the proposed work from the property owner. Refer to the policy of this jurisdiction if it discovers that a dispute regarding the proposed work exists between the applicant and the property owner or any other party with a legal interest in the property.

Plan Review - Review Comments Report

Project Name: **24-020319-STR-01-CO**
Workflow Started: **3/6/2024 9:35:40 AM**
Report Generated: **08/21/2024 01:06 PM**

REVIEW COMMENTS

REF #	CYCLE	REVIEWED BY	TYPE	FILENAME	DISCUSSION	STATUS
1		Project Administrator Abbot Flatt 3/11/24 4:25 PM	Comment Hi Willis, I looked through your upload and have a few comments. 1.Do you have any Reference Drawings to upload? Our Phased Permitting guidance documentation (https://www.portland.gov/bds/commercial-permitting/documents/phased-permitting-information-packet/download) requires 70% complete building shell drawings marked For Reference. 2.I looked through the Micropile Design document and see two drawing sheets. MP-01 and MP-02 should be included in the Drawings Folder. 3.Youll need to upload an Information and Directions drawing sheet which should be the second drawing sheet in the Drawings folder. Youll find a little more information on this on Page 4 of this document: https://www.portlandoregon.gov/bds/article/740359 Ill open the ProjectDox task / session back up to you so you can correct the issues above. Please let me know if you have questions. Best, Abbot			Resolved
2		Project Administrator Abbot Flatt 3/20/24 4:04 PM	Comment Life Safety Prescreen Comment: There two A0.01 sheets (one in this submittal and one in the reference main permit drawings). They should rename one of them.		Coordinator Response: Abbot Flatt - 3/20/24 4:31 PM I walked through the submittal with the applicant and the reference package has a sheet "A0.02" whereas the drawings have a sheet "A0.01".	Resolved
3	1	Life Safety Maureen McCafferty 4/12/24 7:20 AM	Changemark OSSC 107.2.1 Clarification on scope of work Coordinate area of work shown betweeen sheet AD1.00B and AD1.00. It appears that work is occurring in Hall C0-2, Pool Equipment M0-4, Pool Equipment M0-5 and Janitor J0-0. Sheet AD1.00has these rooms marked as not in the scope of work, but this sheet seems to indicate that there may be some scope within these spaces.	037 AD1.00B - DEMO PLAN - BASEMENT - SECTOR B.pdf	Reviewer Response: Maureen McCafferty - 6/20/24 2:03 PM Recheck 01: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:08 PM Confirmed. Scope of work includes these spaces. Please see revised area of work hatch on AD1.00 and AD1.00B.	Resolved
4	1	Life Safety Maureen McCafferty 4/12/24 7:20 AM	Changemark OSSC 3302.1 Egress safety If work is occurring in Hall C0-2, please clarify how access to Stair5 and the means of egress to this stair is maintained during construction.	037 AD1.00B - DEMO PLAN - BASEMENT - SECTOR B.pdf	Reviewer Response: Maureen McCafferty - 8/19/24 8:34 AM Recheck 03: Resolved. --- Responded by: Willis DeWitt - 8/12/24 1:58 PM Work in Hall C0-2 will occur when building is unoccupied. Please see revised Keynote 9 on OSP02. Temporary construction double doors and existing single door into Storage 01 will be removed during Construction Phase 2a when Storage 01 is utilized as a	Resolved

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					path of egress. Please see revied Keynote 9 on OSP05. Existing door and new double door into Storage 01 will be reinstalled after access to Stair 05 is restored. This will be documented in the main building permit. --- Reviewer Response: Maureen McCafferty - 8/5/24 1:43 PM Recheck 02: Partially resolved. Please clarify what is meant by keynote 9 on OSP02, where work will be completed in shifts? I am unclear whether this means that work is only occurring when the building is unoccupied or that there are shifts while the building is occupied. Additionally, since the temporary doors into Storage 01 will be a part of the means of egress during construction, please provide some basic size and door hardware information to confirm that it meets the requirements of chapter 10 as part of the means of egress. This is for both the new double doors into Storage 01 from Hall CO-2 and the existing door from Storage 01 into Corridor CO-1 --- Responded by: Willis DeWitt - 7/10/24 5:46 PM Please see revised keynote 9 on OSP02. --- Reviewer Response: Maureen McCafferty - 6/24/24 11:08 AM Recheck 01: Unresolved. Access through construction areas for egress is not allowed, without a building appeal. Egress paths need to be clear of all construction materials and equipment or spaces are to be unoccupied during construction. --- Responded by: Willis DeWitt - 5/29/24 5:08 PM Please see revised sheet OSP02 and added keynote 9 on detail 1/OSP02 and 2/OSP02. Please see added sheet OSP05 and keynote 7 on 1/OSP05 and 2/OSP05.	
5	1	Life Safety	Changemark	040 AD1.01B - DEMO PLAN - LEVEL 1 -	Reviewer Response: Maureen McCafferty - 8/19/24 8:36	Resolved

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		Maureen McCafferty 4/12/24 7:56 AM	OSSC 3302.1 Safeguard during construction Please clarify how the means of egress thru both the north and south doors will be maintained from Weight Training 118 during demolition and removal of the finish floor.	SECTOR B.pdf	AM Recheck 03: Resolved. --- Responded by: Willis DeWitt - 8/12/24 1:58 PM Removal of existing vinyl composite floor tile and existing double doors in Weight Training 118 will occur when the building is unoccupied. Space will remain open without doors until the new doors are installed under the main permit. Floor transition detail has been added to the sheet. Please see Revised Keynote 7 and revised sheet OSP05. --- Reviewer Response: Maureen McCafferty - 8/5/24 1:37 PM Recheck 02: Partially resolved. Clarify keynote 7 on OSP05, where work will be completed in shifts. I am unclear whether this means that work is only occurring when the building/space is unoccupied or that there will be shifts while the building is occupied. If Weight Training 118 will be unoccupied while the doors are removed and reinstalled and while the flooring outside the room (on both the north and south sides), please note that accordingly. Otherwise, clarify whether there will be temporary doors (and provide size and hardware info), or that the space will be open without doors until the doors are installed under the main permit, or that the new permanent doors will be installed during this phase and provide a door schedule, dimensions, details, hardware schedule, rating requirements as required, etc. per the requirements of OSSC 1010. Additionally, please provide clarity on how the floor transitions are being provided in the path of egress where finish flooring is removed within the path of egress from Weight Training 118 and along the path to Stairs 2 and 4. Provide a detail to address the change in elevation in accordance with OSSC 1010.1.6 and ICC A117.1 303.1. --- Responded by: Willis DeWitt - 7/10/24 5:47 PM Please see revised keynote 7 on OSP05. --- Reviewer Response: Maureen McCafferty - 6/24/24 11:42 AM Recheck 01: Unresolved. Access through construction	

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					areas for egress is not allowed, without a building appeal. Egress paths need to be clear of all construction materials and equipment or spaces are to be unoccupied during construction. Also clarify whether the doors to Weight Training 118 are being removed and replaced under this project as demo plans AD1.01 + AD1.01B shows the doors as being removed, but the reference set does not indicate new doors in these locations, please clarify. ---------- Responded by: Willis DeWitt - 5/29/24 5:09 PM Please see added sheet OSP05 and keynote 7 on 1/OSP05 and 2/OSP05.	
6	1	Life Safety Maureen McCafferty 4/15/24 10:13 AM	Changemark OSSC 107.2.1 + 3302.1 Drawing coordination for occupancy during construction Please clarify the occupancy safety plans. Based on the provided plans, it appears that egress shall be maintained and travel thru areas that are being demolished and having work completed. For instance, sheet OSP02 shows egress thru the locker rooms, but on sheet AD1.01B, these areas are being fully demolished. Provide detailed information on how occupant safety will be maintained for the path of egress through work areas.	003 OSP02 - OCCUPANCY DURING CONSTRUCTION SAFETY PLANS.pdf	Reviewer Response: Maureen McCafferty - 8/20/24 1:05 PM Recheck 03: Resolved. ---------- Responded by: Willis DeWitt - 8/12/24 1:59 PM Graphics on the phasing diagrams have been updated to only show work included in this permit application. Diagrams showing Permit Phase 2 are noted as “for reference.” Please see revised sheets G0.03 and G0.04. ---------- Reviewer Response: Maureen McCafferty - 8/7/24 6:27 AM Recheck 02: Thank you for providing the phasing diagrams. The information shown in this set should only represent those items that are being permitted under this phase. Any information for the main building permit phase should be greyed out or clearly marked as work under future permit phase. ---------- Responded by: Willis DeWitt - 7/10/24 5:47 PM Additional clarifications have been added to the occupancy safety plans. Please see revised occupancy safety plans. Phasing diagrams have been added to the drawing set to clarify permit phasing, demolition phasing, and construction phasing. Please see added sheets G0.03 - Phasing Diagrams and G0.04 - Phasing Diagrams.	Resolved

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					---------- Reviewer Response: Maureen McCafferty - 6/21/24 8:00 AM Recheck 01: Unresolved. Coordinate construction phasing, occupant safety plan phasing and demo phasing to correlate. Clearly define when and what work is to occur in which order and confirm that egress is provided as needed for occupied areas. ---------- Responded by: Willis DeWitt - 5/29/24 5:09 PM Demolition of the locker area will occur in Construction "Phase 2". Occupants will not be allowed to enter the locker room while work is occuring, and paths of egress of the occupied spaces do not rely on the locker room for egress. Please see added sheet OSP05.	
7	1	Life Safety Maureen McCafferty 4/15/24 10:26 AM	Changemark OSSC 3302.1 Stair enclosure protection As a rated stair enclosure, and a required means of egress from Level 1 + 2 during construction, please describe how the stair enclosure fire rating is maintained for Stair 1 (and Stair 5) or show how the stair is not a required means of egress from any level during construction.	043 AD1.02B - DEMO PLAN - LEVEL 2 - SECTOR B.pdf	Reviewer Response: Maureen McCafferty - 8/9/24 1:31 PM Recheck 02: Resolved. ---------- Responded by: Willis DeWitt - 7/10/24 5:48 PM Occupancy Safety Plans have been revised so Stair 1 and Stair 5 are not a required means of egress when construction occurs within them (Construction Phase 2). Please see revised OSP05 and OSP06. ---------- Reviewer Response: Maureen McCafferty - 6/25/24 2:16 PM Recheck 01: Unresolved. Stair 1 and Stair 5 cannot be used as a means of egress while the stair itself is under construction. Provide an alternative means of egress, provide protections for the means of egress while stair is under construction, or get approval through a building code appeal to utilize stairs while under construction. If stair work is to occur when building is unoccupied, very clearly note that. Work areas cannot be cleaned up in an emergency event prior to being	Resolved

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					available for egress. --- Responded by: Willis DeWitt - 5/29/24 5:10 PM Stair 5 is a required means of egress for the duration of construction. Stair 1 is a required means of egress in Construction "Phase 1". Please see added sheets OSP05 and OSP06 for clarification on maintaining path of egress and fire rating.	
8	1	Life Safety Maureen McCafferty 4/15/24 10:26 AM	Changemark OSSC 3302.1 Opening protection Address how the 2 hour fire rated wall protection is maintained where the doors (266-1, 266-2, 266-3, 266-4 + unnumbered double door in the SE corner) are removed at Gym 266.	043 AD1.02B - DEMO PLAN - LEVEL 2 - SECTOR B.pdf	Reviewer Response: Maureen McCafferty - 8/20/24 1:04 PM Recheck 03: Resolved. --- Responded by: Willis DeWitt - 8/12/24 1:59 PM Keynotes on the Occupancy During Construction Plans have been updated to call out temporary construction partitions required for fire protection/separation. Please see revised sheet OSP02, OSP05 and OSP06. --- Reviewer Response: Maureen McCafferty - 8/9/24 1:31 PM Recheck 02: Partially resolved. Thank you for adding wall details on OSP02. Please tag or note the location of where these walls occur. Address specifically any areas of required fire protection/separation (like the separation wall along grid line E). --- Responded by: Willis DeWitt - 7/10/24 5:48 PM A rated temporary partition and a rated assembly has been provided. Please see revised sheet OSP06. --- Reviewer Response: Maureen McCafferty - 6/25/24 2:43 PM Recheck 01: Unresolved. Demo plan AD1.02B shows doors being removed. Is there a rated temporary wall being put in place to maintain the required separation? If yes, provide a rated assembly for approval.	Resolved

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					---------- Responded by: Willis DeWitt - 5/29/24 5:11 PM Wall rating requirement is 1-hour. Removal of doors will occur during Construction "Phase 2". Reference added sheet OSP06 and Keynote 6.	
9	1	Life Safety Maureen McCafferty 4/15/24 10:50 AM	Changemark OSSC 107.2.1 Drawing clarifcation Please clarify areas marked as construction zones. It appears from the demolition plans, that work will occur in the locker room area in addition to the old pool area. Please coordinate the occupancy safety plans with the demolition plans.	003 OSP02 - OCCUPANCY DURING CONSTRUCTION SAFETY PLANS.pdf	Reviewer Response: Maureen McCafferty - 8/20/24 1:04 PM Recheck 03: Resolved. ---------- Responded by: Willis DeWitt - 8/12/24 1:59 PM Graphics on the phasing diagrams have been updated to only show work included in this permit application. Diagrams showing Permit Phase 2 are noted as “for reference.” Please see revised sheets G0.03 and G0.04. ---------- Reviewer Response: Maureen McCafferty - 8/9/24 1:41 PM Recheck 02: Partially resolved. Thank you for providing the phasing diagrams on G0.03 and G0.04. Review drawings to verify that only that work to occur under this permit phase is being shown in the permit submittal. Any information for the main building permit phase should be greyed out or clearly marked as work under future permit phase. ---------- Responded by: Willis DeWitt - 7/10/24 5:49 PM Additional clarifications have been added to the occupancy safety plans. Please see revised occupancy safety plans. Phasing diagrams have been added to the drawing set to clarify permit phasing, demolition phasing, and construction phasing. Please see added sheets G0.03 - Phasing Diagrams and G0.04 - Phasing Diagrams. ---------- Reviewer Response: Maureen McCafferty - 6/24/24 2:07 PM Recheck 01: Unresolved. Please provide additional	Resolved

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					details and clarification to scope, scheduling and timing of work to occur, specifically in Sector B. Documents need to address how fire rated protections are being provided where necessary and how means of egress are provided when the building is under construction. --- Responded by: Willis DeWitt - 5/29/24 5:12 PM The occupancy safety plans originally submitted were for Construction "Phase 1" which only includes the old pool area. The occupancy safety plan submission has been revised to include Construction "Phase 1" and "Phase 2" which clarifies the full project areas of construction. Please see added sheets OSP05, OSP06, and OSP07.	
10	1	Life Safety Maureen McCafferty 4/15/24 10:52 AM	Changemark OSSC 3302.1 Stair enclsoure protection As a rated stair enclosure, and a required means of egress from Level 0 during construction, please describe how the stair enclosure fire rating is maintained for Stair 5 or show how the stair is not a required means of egress from any level during construction.	040 AD1.01B - DEMO PLAN - LEVEL 1 - SECTOR B.pdf	Reviewer Response: Maureen McCafferty - 8/9/24 8:37 AM Recheck 02: Resolved. --- Responded by: Willis DeWitt - 7/10/24 5:49 PM Occupancy Safety Plans have been revised so Stair 1 and Stair 5 are not a required means of egress when construction occurs within them. --- Reviewer Response: Maureen McCafferty - 6/24/24 2:04 PM Recheck 01: Unresolved. Stair 5 cannot be used as a means of egress while the stair itself is under construction without the benefit of a building code appeal. Address how the continuity of the stair is maintained while doors are removed and infill wall is constructed. --- Responded by: Willis DeWitt - 5/29/24 5:12 PM Stair 5 is a required means of egress for the duration of construction. Stair 1 is a required means of egress in Construction "Phase 1". Please see added sheets OSP05 and OSP06 for	Resolved

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					clarification on maintaining path of egress and fire rating.	
11	1	Life Safety Maureen McCafferty 4/15/24 1:00 PM	Changemark OSSC 1014.6 Handrail Extension Handrails shall continue to slope for the depth of one tread beyond the bottom riser. It appears that the treads are 12" deep, therfore the handrail needs to extend 12" beyond the bottom riser. Revise as necessary.	075 A5.50 - STAIR AND GUARDRAIL DETAILS.pdf	Reviewer Response: Maureen McCafferty - 6/24/24 2:00 PM Recheck 01: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:12 PM Detail has been revised. Please see revised sheet A5.50.	Resolved
12	1	Life Safety Maureen McCafferty 4/15/24 1:42 PM	Changemark OSSC 107.2.1 Code summary required A building code summary will be required for this scope of work. Plesae include building construction type, hourly ratings of building elements based on construction type, occupancy classifications, etc.	035 A0.01 - DRAWING INDEX SYMBOLS AND ABBREVIATIONS.pdf	Reviewer Response: Maureen McCafferty - 8/20/24 1:03 PM Recheck 03: Resolved. --- Responded by: Willis DeWitt - 8/12/24 1:59 PM Please see revised sheet G0.02a. --- Reviewer Response: Maureen McCafferty - 8/9/24 2:03 PM Recheck 02: Unresolved. --- Responded by: Willis DeWitt - 7/10/24 5:49 PM Code summary has been revised to include relevant information for this portion of work. Floor plan diagrams have been updated to include rated wall locations. --- Reviewer Response: Maureen McCafferty - 6/25/24 2:54 PM Recheck 01: Unresolved. I am not sure how the plans on G0.02a are relevant to the code summary and are probably not necessary for this portion of the work. I was unclear on the scope the first round, and I think we can par back on the information required for this code summary. The relevant information includes the construction type and necessary hourly ratings for elements that need to be temporarily built to replace elements that normally need to be rated. The main	Resolved

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					permit will cover the overall code summary, but this needs to cover basic summary for this phase/scope. --- Responded by: Willis DeWitt - 5/29/24 5:12 PM A building code summary has been provided. Please see sheet added sheet G0.02a.	
13	1	Life Safety Maureen McCafferty 4/15/24 2:06 PM	Changemark OSSC 602.1 Fire resistance rating based on construction typ Based on the reference drawing set, it appears that this is a type IIA building, and floor construction and associated secondary stuctural elements are required to be 1 hour rated. Provide an approved, tested rated assembly for the floor construction and associated secondary structural members.	066 AS1.00C - SLAB PLAN - BASEMENT - SECTOR C.pdf	Reviewer Response: Maureen McCafferty - 6/25/24 3:14 PM Recheck 01:Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:13 PM Please see added sheet A0.40 - Structural Fire Proofing Assemblies and Plans.	Resolved
14	1	Life Safety Maureen McCafferty 4/15/24 2:23 PM	Changemark OSSC 1014.6 Handrail extensions Handrail extension are requried on both sides of the stair and shall extend at least one tread depth past the bottom riser at Levels 1 + 2.	072 A4.11 - VERTICAL CIRCULATION - STAIRS.pdf	Reviewer Response: Maureen McCafferty - 6/24/24 1:21 PM Recheck 01: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:14 PM Sheets A4.11 and A4.12 document scope of work to address non-compliant handrails and guardrails in existing stairs. Per 3405.3.1 Exception 2: Handrails otherwise required to comply with Section 1011.11 shall not be required to comply with the requirements of Section 1014.6 regarding full extension of the handrails where such extensions would obstruct egress paths because of plan configurations. Handrail extensions on both sides of the stair would create an obstruction to the egress path and extend more than 4.5 inches into the path of egress. Handrail extensions have been modified to extend, but not conflict with the path of egress. Please revised sheets A4.11 and A4.12.	Resolved
15	1	Life Safety	Changemark	072 A4.11 - VERTICAL CIRCULATION -	Reviewer Response: Maureen McCafferty - 8/7/24 9:51	Resolved

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		Maureen McCafferty 4/15/24 2:23 PM	OSSC 1023.2 Interior exit stair construction Based on the demo plan, a pair of doors previously existed on Level 1 of Stair 5. Please provide an approved tested vertical assembly for this infill construction.	STAIRS.pdf	AM Recheck 02: Resolved. --- Responded by: Willis DeWitt - 7/10/24 5:49 PM Please see revised sheets OSP05 and OSP06 and updated keynotes. --- Reviewer Response: Maureen McCafferty - 6/25/24 3:23 PM Recheck 01: Resolved. Confirm how the stair protection is maintained during construction, while building is occupied. --- Responded by: Willis DeWitt - 5/29/24 5:14 PM Please see revised sheet A4.11 for wall type call out and please added sheet A0.40 - Structural Fireproofing Assemblies and Plans for assembly.	
16	1	Structural Whitney Olsen 4/16/24 5:11 PM	Changemark Occupant Safety Plans (OSSC 3302) Occupant safety plans provided show occupancy during Phase 1 and a description of work during Phase 1. Please provide a full description of work that is to be done under Phase 2. Provide plans showing areas of occupancy and areas that are to be blocked off during Phase 2.	003 OSP02 - OCCUPANCY DURING CONSTRUCTION SAFETY PLANS.pdf	Reviewer Response: Whitney Olsen - 8/21/24 9:21 AM 8/21/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 8/13/24 1:14 PM Please see revised drawings and calculations provided by contractor. --- Reviewer Response: Whitney Olsen - 7/23/24 2:29 PM 7/23/2024 WOlsen: Partially resolved. 1. Resolved. 2. Resolved. 3. Resolved. 4. Pedestrian protection scaffold drawings have been submitted which show overall dimensions but lack connection details and component specifications. Specify frame members and connections on the stamped drawings. Submit calculations as originally requested demonstrating structure is adequate for 150 psf live load. --- Responded by: Willis DeWitt - 7/12/24 3:32 PM	Resolved

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					Additional clarifications have been added to the occupancy safety plans. Please see revised occupancy safety plans. Phasing diagrams have been added to the drawing set to clarify permit phasing, demolition phasing, and construction phasing. Please see added sheets G0.03 - Phasing Diagrams and G0.04 - Phasing Diagrams. --- Reviewer Response: Whitney Olsen - 6/27/24 11:35 AM 6/27/2024 WOlsen: Be more specific on the occupancy safety plans regarding when the structural work included in this permit is to occur and in which construction phase. This includes, but is not limited to: 1. Phase 1 (OSP02) Structure includes, "Reinforcement of existing structure for new openings." Phase 2 (OSP05) Structure description states the same thing. Clarify which reinforcement happens in Phase 1 versus Phase 2. 2. Phase 1 (OSP02) Demolition states, "Sawcutting existing shear walls and roof assembly for new opening to be completed in Phase 2." Phase 2 (OSP05) Demolition description does not include this scope of work. Sawcutting of existing shear walls can only occur after shotcrete and collector construction is complete. 3. Clarify when all new openings and infills of interior walls and slabs occur in Sector B (work shown on S1.01). 4. As discussed in our Occupancy Safety meeting, if pedestrian protection is needed to exit the building during construction, drawings, details, and calculations are needed for the protection structure. Such structures shall be designed for 150 psf live load per OSSC 3306. --- Responded by: Willis DeWitt - 5/29/24 5:17 PM The full set of occupancy safety during construction plans has been provided.	
17	1	Structural Whitney Olsen 4/16/24 5:12 PM	Changemark Deferred Submittals (OSSC 107.3.4.1) Please clarify on the drawings which deferred submittals shall be submitted under the structural STR-01 permit and which shall be with the main -CO permit. Coordination of deferred submittal requirements on the drawings and on record at the City can prevent delays near the completion of the permit. Please review the items and respond if any that are on the drawings and part of this permit are shown incorrectly or are not shown.	007 S0.02 - GENERAL STRUCTURAL NOTES.pdf	Reviewer Response: Whitney Olsen - 6/27/24 11:36 AM 6/27/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:17 PM Refer to revised structural drawing S0.02 for revised deferred submittal list. Deferred submittals that are not part of the structural permit are indicated to be part of	Resolved

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					the main building permit.	
18	1	Structural Whitney Olsen 4/16/24 5:13 PM	Changemark Roof tie-off anchors (OSSC 1607.11.4, OSSC 107.3.4.1) Confirm if roof tie-off anchors are to be a deferred submittal. They do not appear to be specified in the drawings. If they are not a deferred submittal, design and calculations of the roof anchor is required, or specification of anchor product with approved test report (ICC or ANSI Z359.18 Type A or Type T).	007 S0.02 - GENERAL STRUCTURAL NOTES.pdf	Reviewer Response: Whitney Olsen - 7/23/24 2:30 PM 7/23/2024 WOlsen: Roof anchors and FRP are deferred submittals with the STR-01 permit. All other deferred submittals will be set up with the main -CO permit. Resolved. --- Responded by: Willis DeWitt - 7/12/24 3:32 PM The anchors will be included in a DFS, refer to revised drawing S0.02 and details. --- Reviewer Response: Whitney Olsen - 6/27/24 11:36 AM 6/27/2024 WOlsen: Partially resolved. The anchor attachment has been provided, but the anchor itself needs to be specified. Specify roof anchor product to be used (manufacturer and model number) along with either: 1) ICC Report, 2) ANSI Z359.18 Type A or Type T test report, or 3) stamped calculations. --- Responded by: Willis DeWitt - 5/29/24 5:17 PM Refer to revised structural drawings and calculations. Roof tie-offs will not be a deferred submittal item.	Resolved
19	1	Structural Whitney Olsen 4/16/24 5:14 PM	Changemark Seismic certification of designated seismic systems (OSSC 1705.13.4, ASCE 7-16 13.2.2) If attachment of equipment is to be a deferred submittal part of this STR-01 permit, the components that require seismic certification need to be identified on the drawings. The seismic certification can be a deferred submittal, if preferred.	007 S0.02 - GENERAL STRUCTURAL NOTES.pdf	Reviewer Response: Whitney Olsen - 6/27/24 11:36 AM 6/27/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:17 PM The deferred submittal requirement for MEP equipment will be included in the main building permit. The requirement is indicated here for reference only, refer to revised sheet S0.02.	Resolved
20	1	Structural Whitney Olsen 4/16/24 5:14 PM	Changemark ASCE 41 should be used as the seismic design standard (OSSC 3408.5.3, ASCE 7-16 Table 12.2-1) It appears the lateral analysis and design of the building alterations were in	007 S0.02 - GENERAL STRUCTURAL NOTES.pdf	Reviewer Response: Whitney Olsen - 6/27/24 11:36 AM 6/27/2024 WOlsen: Resolved. See new comments. ---	Resolved

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			accordance with ASCE 7-16 assuming special reinforced concrete shear wall system with an R = 5.0. This is not an appropriate assumption for an existing conrete building that was constructed in 1970. The existing concrete walls in the building do not meet the detailing requirements to be considered special, especially with the latest code changes in ACI 318-19 Chapter 18. If it is desired to use existing lateral elements to resist the modified lateral loads, then ASCE 41 shall be used to evaluate the existing system and the strengthened design.		Responded by: Willis DeWitt - 5/29/24 5:18 PM Refer to updated seismic criteria on sheet S0.02 and revised calcuations.	
21	1	Structural Whitney Olsen 4/16/24 5:16 PM	Changemark Special Inspection Form required (OSSC 1704, OSSC 110.3.9) Special Inspections are required on this project. Documentation of the inspections is required per Title 24.20. Please download and complete the special inspections form in the City Attachments folder for this permit (in ePLANS). The special inspection items noted on the form shall also be clearly listed on the drawings (OSSC 110.3.9/1704). The project owner shall provide a copy of the special inspection form to the special inspection agency and Engineer of Record. Please upload a copy of the completed form to the Documents folder for this permit (in ePLANS).	010 S0.05 - SPECIAL INSPECTIONS AND TESTING.pdf	Reviewer Response: Whitney Olsen - 6/27/24 11:36 AM 6/27/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:18 PM Refer to attached completed special inspection form.	Resolved
22	1	Structural Whitney Olsen 4/16/24 5:18 PM	Changemark New posts on existing foundation along grid I (OSSC 1604.4 OSSC 3405.2.4) Provide a detail for the base connection of the new HSS6x6 posts landing on existing foundations along grid I. Calculation page 129 indicates the gravity demand along grid I from 2 to 4 increased by more than 5% and "therefore foundations will be strengthened with micropiles." Clarify where this strengthening occurs along grid I.	015 S1.00C - BASEMENT FOUNDATION PLAN - SECTOR C.pdf	Reviewer Response: Whitney Olsen - 7/23/24 2:31 PM 7/23/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 7/12/24 3:32 PM The grade beam is upturned above the slab on grade at this location; ref 15/S5.01 SIM. The plan has been revised to show the edges of the grade beam as a dark line and to callout the top of grade beam elevations. Refer to attached calculations for grade beams. --- Reviewer Response: Whitney Olsen - 6/27/24 11:37 AM 6/27/2024 WOlsen: New grade beam shown in 15/S5.01: a. Clarify how the new grade beam is to be constructed at the existing pile caps. Plan indicates existing foundation at 607.00', slab on grade at 608.00', and detail shows new grade beam to be 2-ft thick. b. Provide calculation for new grade beam. --- Responded by: Willis DeWitt - 5/29/24 5:18 PM Refer to revised drawings S1.00C and calculations.	Resolved

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23	1	Structural Whitney Olsen 4/16/24 5:18 PM	Changemark Foundation ties (ASCE 7-16 12.13.8.2) Per ASCE 7-16 12.13.8.2, individual pile caps shall be interconnected by ties. Please address.	015 S1.00C - BASEMENT FOUNDATION PLAN - SECTOR C.pdf	Reviewer Response: Whitney Olsen - 6/27/24 11:37 AM 6/27/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:18 PM The pile caps are interconnected by slab on grade as allowed by ASCE 7-16 Section 12.13.8.2; refer to calculations which demonstrate that the slab on grade provideds equivalent restraint.	Resolved
24	1	Structural Whitney Olsen 4/16/24 5:19 PM	Changemark New steel framing at new stair (OSSC 1604.4) Provide calculations for the new steel framing for the new stairs in the northwest corner of sector C, shown on S101C and S102C. Provide stair details including treads. Provide beam connection details to existing structural floor elements.	017 S1.01C - LEVEL 1 FRAMING PLAN - SECTOR C.pdf	Reviewer Response: Whitney Olsen - 6/27/24 11:37 AM 6/27/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:18 PM Refer to revised plan S1.01C which references new stair details; refer to revised calculations.	Resolved
25	1	Structural Whitney Olsen 4/16/24 5:25 PM	Changemark New steel framing at low roof openings (OSSC 1604.4) Provide connection details for the new steel framing at the new openings on S1.03C including the cont HSS6x6's at grids E and F and the new C12's. Also, the new roof openings reference S5.01, but it is unclear which details on S5.01 apply here.	021 S1.03C - LEVEL 3 ROOF FRAMING PLAN - SECTOR C.pdf	Reviewer Response: Whitney Olsen - 6/27/24 11:37 AM 6/27/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:18 PM Refer to new and revised details referenced from Sheet S1.03C.	Resolved
26	1	Structural Whitney Olsen 4/16/24 5:25 PM	Changemark FRP reinforcing on roof (OSSC 1604.4) Please clarify how the new opening in the roof diaphragm was analyzed and how the FRP reinforcing shown was designed.	021 S1.03C - LEVEL 3 ROOF FRAMING PLAN - SECTOR C.pdf	Reviewer Response: Whitney Olsen - 7/23/24 2:31 PM 7/23/2024 WOlsen: FRP design has been set up as a deferred submittal for the STR-01 permit. Resolved. --- Responded by: Willis DeWitt - 7/12/24 3:32 PM The FRP will be deferred; sheet S0.02 has been updated to reflect this. The FRP design loads are included on the drawings and are at BSE-2N force-controlled level. --- Reviewer Response: Whitney Olsen - 6/27/24 11:37 AM 6/27/2024 WOlsen: Clarify where in the calculations the	Resolved

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					new opening on the roof diaphragm was analyzed and how the FRP reinforcing was designed. Clarify where the FRP itself is defined. I don't see any specifications in the general notes. Should this be listed in the submittal table on S0.02? There is a collector force listed for the one-direction oriented FRP at grid F on S1.03C. Is the intent to have the FRP design be deferred? If so, there are other areas of FRP installation that need to have design loads defined on the drawings. Also clarify what force level the design loads are (ASCE 41 BSE-1N?). --- Responded by: Willis DeWitt - 5/29/24 5:18 PM Refer to revised calculations provided in response to plan check item 20, and new details referenced from sheet S1.03C.	
27	1	Structural Whitney Olsen 4/16/24 5:26 PM	Changemark Veneer anchors on south elevation (OSSC 1604.4) Clarify on 2/S201 if there are to be new helical brick veneer anchors at the wall sections between 1 and 2.	025 S2.01 - EXTERIOR ELEVATIONS.pdf	Reviewer Response: Whitney Olsen - 6/27/24 11:37 AM 6/27/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:18 PM Refer to revised elevation which has been updated to clarify the scope of new helical anchors.	Resolved
28	1	Structural Whitney Olsen 4/16/24 5:26 PM	Changemark Wall opening at grid G (OSSC 1604.4) On 4/S2.01, it appears a new wall opening on the 2nd story will occur continuously between grids F and H. It is not clear how the low roof/level 3 is framed here. Provide a copy of the existing framing in this area (similar to page 130 of the submitted calculations) to confirm the removal of this exterior wall does not need gravity support.	025 S2.01 - EXTERIOR ELEVATIONS.pdf	Reviewer Response: Whitney Olsen - 6/27/24 11:38 AM 6/27/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:19 PM Refer to the uploaded original structural drawings in the "For Reference" folder. There is an existing concrete beam at the roof level along gridline 1 from gridline E through I. The beam supports its own weight in addition to a small tributary width of roof loading.	Resolved

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29	1	Structural Whitney Olsen 4/16/24 5:27 PM	Changemark Missing information on S2.51 (OSSC 1604.4) Sheet S2.51 appears to be very incomplete. a. Elevations 1 and 3 should indicate new door openings in concrete wall. Provide calculations and, if necessary, strengthening details for the header that spans across the new openings. b. Plan S1.01 appears to show new wall openings at elevations 7 & 8, but this is not indicated here. c. Plan S1.01 specifies infill existing wall opening at elevation 6, but no details for the infill is shown here.	026 S2.51 - INTERIOR ELEVATIONS.pdf	Reviewer Response: Whitney Olsen - 6/27/24 11:38 AM 6/27/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:19 PM Refer to updated elevations on sheet S2.51 which clarify the scope of new openings and infill of existing openings.	Resolved
30	1	Structural Whitney Olsen 4/16/24 5:28 PM	Changemark New shotcrete walls (OSSC 1604.4) Please clarify how the shotcrete panels were designed. It is not clear in the calculations if design is for just existing elements or considers the new shotcrete as well.	029 S3.10 - SHEAR WALL ELEVATIONS AND SFRS DETAILS.pdf	Reviewer Response: Whitney Olsen - 7/23/24 2:31 PM 7/23/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 7/12/24 3:32 PM Refer to updated elevations on sheet S3.10. Refer to revised lateral calculations. --- Reviewer Response: Whitney Olsen - 6/27/24 11:38 AM 6/27/2024 WOlsen: Thank you for the clarifications. Please address the following: 1. Clarify what the vertical and horizontal bars are in the shotcrete areas. Elevation A/S3.10 does not appear to specify this, but does state "3.5 psf reinf steel." Clarify what this means. 2. Confirm the thickness of concrete used in the ETABS and SP Column models for the areas of shotcrete. Details on S3.10 indicate 8" existing wall plus 5" shotcrete = 13" total, but SP column models for P5, P6, P7, and P8 do not use this. --- Responded by: Willis DeWitt - 5/29/24 5:19 PM Refer to revised calculations provided in response to plan check item 20, which clarify the wall design.	Resolved
31	1	Structural Whitney Olsen 4/16/24 5:29 PM	Changemark Clarify where 7/S602 occurs (OSSC 1604.4) Clarify on plan where detail 7/S6.04 occurs. Verify calculations have included the extra dead load of the concrete pad.	032 S6.02 - TYPICAL STEEL DETAILS.pdf	Reviewer Response: Whitney Olsen - 6/27/24 11:38 AM 6/27/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:19 PM The detail is not used and has been removed from the	Resolved

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					drawings.	
32	1	Structural Whitney Olsen 4/16/24 5:31 PM	Changemark New WF beams in 9/S6.04 (OSSC 1604.4) Verify the sizes of the new WF beams shown in 9/S6.04. Plan shows these are both W16x26's. The detail however, appears to show one beam deeper than the other so that the unit is level. Please clarify.	0034 S6.04 - STEEL DETAILS.pdf	Reviewer Response: Whitney Olsen - 7/23/24 2:31 PM 7/23/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 7/12/24 3:32 PM Refer to corrected detail 9/S6.04. --- Reviewer Response: Whitney Olsen - 6/27/24 11:38 AM 6/27/2024 WOlsen: Not addressed. Detail 9/S6.04 still shows one beam much deeper than the other. --- Responded by: Willis DeWitt - 5/29/24 5:19 PM Refer to updated detail which has been revised to show that he beams are the same size, as noted on plan.	Resolved
33	1	Structural Whitney Olsen 4/16/24 5:32 PM	Changemark Post-installed anchor at detail 11/S6.04 (OSSC 1607.11.4) Specify the post-installed anchor shown in 11/S6.04. Provide a calculation.	0034 S6.04 - STEEL DETAILS.pdf	Reviewer Response: Whitney Olsen - 6/27/24 11:39 AM 6/27/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:19 PM Refer to revised detail and calculation.	Resolved
34	1	Structural Whitney Olsen 4/16/24 5:33 PM	Changemark Existing girder supporting new roof units (OSSC 3408.5.2) Clarify how the existing roof girder was modeled in Risa and deemed to be at about 80% stressed per calculation page 141. All of these members are defined as "Girder".	PCC SY-HTW Renovation Structural Calculations.pdf	Reviewer Response: Whitney Olsen - 6/27/24 11:39 AM 6/27/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:19 PM Refer to revised calculations for clarification.	Resolved
35	1	Structural Whitney Olsen 4/16/24 5:34 PM	Changemark Lateral review is preliminary The review of the lateral analysis and design is preliminary because 1) not enough information regarding the design assumptions and ETABS modeling	PCC SY-HTW Renovation Structural Calculations.pdf	Reviewer Response: Whitney Olsen - 6/27/24 11:39 AM 6/27/2024 WOlsen: Resolved. ---	Resolved

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			was given, and 2) an ASCE 41 analysis should have been used. See other changemarks for more information. A complete review of the lateral system will be performed after the above items are addressed. The goal review time of the corrected design will be that for FIRST REVIEWS as outlined here: https://www.portlandoregon.gov/bds/article/187427. Additional comments could arise in the complete review.		Responded by: Willis DeWitt - 5/29/24 5:19 PM Informational comment - no response required.	
36	1	Structural Whitney Olsen 4/16/24 5:34 PM	Changemark ETABS model (ASCE 7-16 12.7.3) More information is needed for the ETABS model: 1) Provide a plan view graphic of the model for each level that clearly shows where the concrete shear walls or other lateral elements are located. 2) Provide elevation views of each lateral wall line in the building. It appears some have been provided, but not all. Clarify what thickness, material property, and stiffness modifiers were used in the wall elements. 3) Clarify how the shotcrete walls were modeled. 4) Update the structural drawings to show where the existing walls occur. This information is not clear.	PCC SY-HTW Renovation Structural Calculations.pdf	Reviewer Response: Whitney Olsen - 8/21/24 9:21 AM 8/21/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 8/13/24 1:14 PM Refer to attached calculations including wall elevations and stiffness modifiers used for walls. --- Reviewer Response: Whitney Olsen - 7/23/24 2:31 PM 7/23/2024 WOlsen: Part 1 – Pages 36-1 thru 36-4 show where wall elements are located in the model, thank you. Please clarify where in the calculations Part 2 of this Changemark was addressed. While the plan view shows wall locations, it is still unknown how the walls were modeled (thickness, material properties, stiffness factors, etc). (Part 3 and 4 resolved) --- Responded by: Willis DeWitt - 7/12/24 3:32 PM Refer to revised plan sheets which have been updated to include a light gray shading at all new and existing concrete wall and column cross sections to make them more visible. Refer to revised lateral calculations. --- Reviewer Response: Whitney Olsen - 6/27/24 11:39 AM 6/27/2024 WOlsen: 1) As originally requested, provide plan view graphic of the model for each level that clearly shows where the concrete shear walls or other lateral elements are located. 2) Elevation views were provided for grids 5, I, E, and 1. There appears to be other lateral wall lines in the building. Please provide. Clarify what stiffness modifiers were used. 3) Resolved (see new comments for shotcrete walls). 4) Not addressed. It is difficult to understand where existing structural shear walls occur in the drawings.	Resolved

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					---------- Responded by: Willis DeWitt - 5/29/24 5:20 PM Refer to revised calculations provided in response to plan check item 20. Refer to revised drawings for wall location clarification.	
37	1	Structural Whitney Olsen 4/16/24 5:36 PM	Changemark Lateral analysis approach (OSSC 3408.5.3) Clarify how it was determined which existing walls see an increase in lateral loads by more than 10%. Are there separate models for before and after modifications? It appears strengthening and design work only occurs along grid 1. It appears many other walls could be affected as this building has rigid diaphragms, there are modifications being made to interior grid E, new openings in the existing diaphrams, and there is a new floor diaphragm at sector C being laterally supported by existing elements on grids 1, 5, E and I.	PCC SY-HTW Renovation Structural Calculations.pdf	Reviewer Response: Whitney Olsen - 8/21/24 9:21 AM 8/21/2024 WOlsen: Resolved. ---------- Responded by: Willis DeWitt - 8/13/24 1:15 PM Refer to attached calculations for a comprehensive comparison of shear in all wall lines. At wall lines that have had modifications, individual piers have been assigned within the line. For wall lines that have not had geometry modifications, only the total shear at each level is compared. Refer to calculations for a detailed breakdown of the wall comparison. ---------- Reviewer Response: Whitney Olsen - 7/23/24 2:32 PM 7/23/2024 WOlsen: Please clarify where specifically in the calculations this item was addressed. ---------- Responded by: Willis DeWitt - 7/12/24 3:32 PM Refer to attached lateral calculations for response. ---------- Reviewer Response: Whitney Olsen - 6/27/24 11:39 AM 6/27/2024 WOlsen: It appears some wall lines were compared to their original state, but not all. And in those wall lines selected, only portions of wall piers were analyzed for comparison. It appears this building has rigid diaphragms, and I don't see any seismic joints between the sectors. There are many modifications proposed under this permit, and it's difficult to determine which existing wall elements will be affected by redistribution of forces. Provide a comparison of how much lateral load is going into each resisting wall line at each level before and after. ----------	Resolved

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					Responded by: Willis DeWitt - 5/29/24 5:20 PM Refer to revised calculation provided in response to plan check item 20.	
38	1	Life Safety Maureen McCafferty 4/17/24 9:00 AM	Changemark OSSC 107.2.1 Drawing clarification Can you clarify the different hatch patterns provided on this page? Are they important or relevant to the scope shown? While this in itself is not a life safety issue, I am struggling to fully grasp the entirity of the proposed scope under this permit. Please note clarifications to the drawings could result in additional plan review comments.	039 AD1.01 - DEMO PLAN - LEVEL 1 - OVERALL.pdf	Reviewer Response: Maureen McCafferty - 6/24/24 1:14 PM Recheck 01: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:14 PM Demolition plan legend has been clarified. Keynotes on demolition plan identifiy floor finish to be removed.	Resolved
39	1	Life Safety Maureen McCafferty 4/17/24 9:17 AM	Changemark OSSC 107.2.1 Permit references and coordination I see an enlarged plan call out to sheet A4.11 in the reference set, but sheet A4.11 exists in the the submitted STR permit. Detail and plan callouts shall be provided in the same permit set/same phase of documents for review. Please review and coordinate throughout accordingly. This is a typical note, not necessarily a single item to address. Further plan review comments may result pending full document coordination.	PCC-SY HT West Renovation - For Reference Only - Drawings.pdf	Reviewer Response: Maureen McCafferty - 6/24/24 12:13 PM Recheck 01: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:14 PM Sheet AG1.00 has been added to the set to call out stair and railing details.	Resolved
40	1	Life Safety Maureen McCafferty 4/17/24 12:53 PM	Changemark OSSC 3302.1 Occupancy safety during construction Please be clear about what portions of the structure will be occupied during construction and which areas will be vacant. Provide complete life safety plans to confirm that occupied portions will remain code compliant during construction and be clear how the occupied portion(s) will be separate and protected from areas under construction. If the entire building will be vacant for the entirity of construction, please note accordingly.	003 OSP02 - OCCUPANCY DURING CONSTRUCTION SAFETY PLANS.pdf	Reviewer Response: Maureen McCafferty - 8/7/24 9:52 AM Recheck 02: Resolved. --- Responded by: Willis DeWitt - 7/10/24 5:50 PM Additional clarifications have been added to the occupancy safety plans. Please see revised occupancy safety plans. Phasing diagrams have been added to the drawing set to clarify permit phasing, demolition phasing, and construction phasing. Please see added sheets G0.03 - Phasing Diagrams and G0.04 - Phasing Diagrams. --- Reviewer Response: Maureen McCafferty - 6/24/24 12:12 PM Recheck 01: Partially resolved. Provide more details on the schedule, phasing and clarifications to how	Resolved

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					occupant safety, both fire protection and means of egress are maintained while the building is occupied. If work is to occur while the building is unoccupied, clearly note which work is to occur while the building is occupied and while the building is unoccupied. --- Responded by: Willis DeWitt - 5/29/24 5:15 PM The full set of occupancy safety during construction plans has been provided.	
41	1	Planning and Zoning Breah Pike-Salas 4/18/24 8:34 AM	Changemark P&Z, B. Pike-Salas Provide the tree diameters and species for these trees. If these trees are 12" or greater in diameter, then tree protection is required or a fee in lieu is to be paid. If the trees are not 12" or greater in diameter, then please make a note on this sheet stating so. Tree protection informaiton can be found via this web page: https://www.portland.gov/code/11/60.	PCC-SY HT West Renovation - For Reference Only - Drawings.pdf	Responded by: Willis DeWitt - 5/29/24 5:16 PM Trees referenced will be new trees added with this project.	Resolved
42	1	Site Development Ye Zhuang 4/18/24 10:56 AM	Changemark Final design Please confirm the design of micropile is final. SD review cannot be performed for a potentially temporary design.	PCC Syl HTW_316263_001_Micropile Design.pdf	Responded by: Willis DeWitt - 5/29/24 5:16 PM Revision 1 of the micropile package incorporates the final micropile design.	Resolved
43	1	Site Development Ye Zhuang 4/18/24 10:57 AM	Changemark Plan A plan showing the micropile locations is required.	096 MP-01 - MICROPILE GENERAL INFORMATION.pdf	Responded by: Willis DeWitt - 5/29/24 5:16 PM Revision 1 of the micropile drawings incorporates a plan sheet to identify micropile types. See sheet MP-02	Resolved
44	1	Site Development Ye Zhuang 4/18/24 10:59 AM	Changemark Additional Geotech Work The calculation pack mentions additional geotechnical investigation and potential design change. Please clarify what additional is work is being done and a final , complete geotechnical engineering report is required.	096 MP-01 - MICROPILE GENERAL INFORMATION.pdf	Responded by: Willis DeWitt - 5/29/24 5:17 PM Revision 1 of the micropile calculation package incorporates the additional geotechnical investigation information. The additional getechnical information included 4ea borings, lab analysis, discussion, and recommendations.	Resolved
45	1	Site Development Ye Zhuang 4/18/24 11:03 AM	Changemark Special Soil Inspection Form Required APPLICANT ACTION ITEM: Special soil inspections are required on this project. Documentation of the inspections is required per Title 24.20. Please download the special inspections form in the City Attachments folder for this	096 MP-01 - MICROPILE GENERAL INFORMATION.pdf	Responded by: Willis DeWitt - 5/29/24 5:17 PM Please see provided special insepctions forms.	Resolved

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			permit in ePlans. Please complete the form with the requested information and upload a copy of the completed form to the Documents folder for this permit in ePlans. Please name the uploaded file with the same title as the file found in the City Attachments folder with “Completed” at the end (e.g. Structural Special Inspection Form Completed). If any of the items requiring special inspection listed on the form are incorrect, please indicate that in the ePlans response for the next review cycle. The special inspection items noted on the form must also be clearly listed on the drawings (OSSC 107.1/1704). The project owner must provide a copy of the special inspection form to the special inspection agency, Engineer of Record and Architect of Record.			
46	1	Life Safety Maureen McCafferty 4/18/24 1:45 PM	Changemark OSSC 2406.4.6 Safety glazing/guad at stair Please address the safety glazing or a guard at new stair construction.	071 A4.10 - VERTICAL CIRCULATION - STAIRS.pdf	Reviewer Response: Maureen McCafferty - 8/7/24 9:12 AM Recheck 02: Resolved. Protection to be provided under next phase. --- Responded by: Willis DeWitt - 7/10/24 5:50 PM Please see revised sheet A4.10 for clarifications on safety glazing at stair. --- Reviewer Response: Maureen McCafferty - 6/21/24 7:12 AM Recheck 01: Unresolved. I could not find any clarification on safety glazing requirements for windows at the stair. Sheet A4.10 was not updated under this submittal. If the glazing or guard at the window is being provided under a separate permit phase, please note clearly. --- Responded by: Willis DeWitt - 5/29/24 5:15 PM Please see revised Sheet A4.10 for clarifications on safety glazing at stair.	Resolved
47	1	Life Safety Maureen McCafferty 4/18/24 2:19 PM	Changemark OSSC 1011.5.2 Riser height Please list the maximum riser height for the new stairs.	075 A5.50 - STAIR AND GUARDRAIL DETAILS.pdf	Reviewer Response: Maureen McCafferty - 6/21/24 7:09 AM Recheck 01: Resolved. --- Responded by: Willis DeWitt - 5/29/24 5:15 PM Please see revised sheet A5.50.	Resolved

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48	1	Life Safety Maureen McCafferty 4/18/24 2:31 PM	Changemark OSSC 1019.3 Open exit access stair Please address the open exit access stairway in accordance with 1019.3. It appears that the new stair and floor opening created between grids E + F create an opening that will atmospherically wll connect at least 3 storeys when open to the central circulation space between grides 5A + 5B.	PCC-SY HT West Renovation - For Reference Only - Drawings.pdf	Reviewer Response: Maureen McCafferty - 8/20/24 12:58 PM Recheck 03: Resolved. --- Responded by: Willis DeWitt - 8/12/24 2:00 PM Keynotes on the Occupancy During Construction Plans have been updated to call out temporary construction partitions required for fire protection/separation. Please see revised sheet OSP02, OSP05 and OSP06. --- Reviewer Response: Maureen McCafferty - 8/7/24 9:11 AM Recheck 02: Partially resolved. Thank you for adding wall details on OSP02. Please tag or note the location of where these walls occur. Address specifically any areas of required fire protection/separation (like the separation wall along grid line E). --- Responded by: Willis DeWitt - 7/10/24 5:50 PM Please see OSP02 keynote 8. Please see revised OSP05 and OSP06 for temporary rated partition. --- Reviewer Response: Maureen McCafferty - 6/25/24 3:28 PM Recheck 01: Partially resolved. Atmospheric separation is required in accordance with 1019.3, 712.9, and associated 713.2. A one hour wall with protected openings will be required. Updates to final construction elements can occur under next stage in permit process, but please provide required protection to separate occupied space from non-occupied space. --- Responded by: Willis DeWitt - 5/29/24 5:16 PM The existing three story atrium will be atomospherically separated from the two story openings/stair in Sector C. On level 1 this will be achieved by the existing hold open door at the east end of Circulation C1-03 and a new hold open door at the east end of Circulation C1-05. On level 2 this will be achieved by a new hold open door at the north end of Lobby 210. The new non-rated smoke partition doors will contain	Resolved

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					automatic-closing device that holds the door open and closes the door on actuation of the fire alarm system. Doors will be included in a future permit. Occupancy safety plans have been clarified to maintain astmospheric separation during construction.	
49	2	Life Safety Maureen McCafferty 6/26/24 11:32 AM	Changemark 2022 OSSC 3302.1 Occupant egress protection Please provide a plan for protecting the path of egress out of egress doors located below scopes of work. For instance, please show how the means of egress is protected from demo work occuring above exterior doors at level from from stair 1 and stair 5, as well as the exterior door from Corridor CO-1.	061 AD2.02 - DEMO ELEVATIONS - EXTERIOR.pdf	Reviewer Response: Maureen McCafferty - 8/7/24 8:47 AM Recheck 02: Resolved; coordinate as needed with structural. ---------- Responded by: Willis DeWitt - 7/10/24 5:50 PM Please see added keynotes on AD2.02 directing to the OSP sheets. Please see revised OSP sheets indicating engineered scaffolding at west exit and closure of Stair 1 and 5 during Construction Phase 2.	Resolved
50	2	Life Safety Maureen McCafferty 6/26/24 11:42 AM	Changemark Changemark #01 Thank you for reviewing the comments with our meeting on 6/26. Once you have had a chance to review the notes from our meeting and the notes in my recheck, if you still have questions, please feel free to reach out to me. I am happy to review any concerns or if you would like to discuss proposed solutions. Please reach out to me at Maureen.McCafferty@portlandoregon.gov and we can schedule a Teams virtual meeting to review your questions or the drawings.	001 G0.00 - COVER PAGE AND DRAWING INDEX.pdf		Info Only
51	2	Structural Whitney Olsen 6/27/24 11:32 AM	Changemark Max aggregate size for shotcrete (ACI 318-19 26.4.2.1(a)(17)) Per ACI 318-19 26.4.2.1(a)(17), nominal maximum size of coarse aggregage shall not exceed 1/2 inch for shotcrete. The table shown on S0.02 shows 3/4 inch for shotcrete. Please address.	007 S0.02 - GENERAL STRUCTURAL NOTES.pdf	Reviewer Response: Whitney Olsen - 7/23/24 2:32 PM 7/23/2024 WOlsen: Resolved. ---------- Responded by: Willis DeWitt - 7/12/24 3:32 PM Refer to revised sheet S0.02.	Resolved
52	2	Structural Whitney Olsen 6/27/24 11:34 AM	Changemark Collector design per ASCE 41 (ASCE 41-17 7.2.9) Provide calculations for the design of the collectors shown on S3.10 per ASCE 41-17 7.2.9.	029 S3.10 - SHEAR WALL ELEVATIONS AND SFRS DETAILS.pdf	Reviewer Response: Whitney Olsen - 8/21/24 9:21 AM 8/21/2024 WOlsen: Resolved. ---------- Responded by: Willis DeWitt - 8/13/24 1:15 PM Refer to attached calculations for location of Pier 12 and justification of deletion of drag connection at B/S3.10 Refer to revised sheet S3.10 which replaced old details 3	Resolved

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					& 4 which are not used with new details 3 and 4 at the 1" x 14" collector plate. --- Reviewer Response: Whitney Olsen - 7/23/24 2:32 PM 7/23/2024 WOlsen: Clarifications are needed for the design updates shown on S3.10. I see a drag connection is deleted from B/S3.10? Please explain. Calculation page 47 refers to “Pier 12”, but I don’t know where that pier label is defined. Page 48 refers to a 1”x14” collector needed, which I see in the new note on A/S3.10. This note on the elevation also refers to 5&6/S3.10, but there does not appear to be details 5 and 6 on S3.10. I also cannot see where detail 3/S3.10 is applicable. --- Responded by: Willis DeWitt - 7/12/24 3:32 PM Refer to attached lateral calculations and updated drawing S3.10.	
53	2	Structural Whitney Olsen 6/27/24 11:35 AM	Changemark m-factors used in design (ASCE 41-17 Tables 10-21 & 10-22) Clarify how m-factors 1.8 and 2.5 were determined for shear and flexure.	PCC SY-HTW Renovation Structural Calculations.pdf	Reviewer Response: Whitney Olsen - 7/23/24 2:32 PM 7/23/2024 WOlsen: Resolved. --- Responded by: Willis DeWitt - 7/12/24 3:32 PM Refer to attached lateral calculations.	Resolved
54	3	Life Safety Maureen McCafferty 8/9/24 2:15 PM	Changemark 2022 OSSC 107.3.3 Drawing clarity for phased permit Sheets G0.06 and G0.07 are not included with this set. Please remove reference to them from this permit. Review drawings and code information for relevancy to this phase of the permit. Identify only work that will occur under this permit and clearly demarcate work to occur under a separate submittal.	001.1 G0.02a - DEMO AND STRUCTURAL CODE SUMMARY.pdf	Reviewer Response: Maureen McCafferty - 8/20/24 12:56 PM Recheck 03: Resolved. --- Responded by: Willis DeWitt - 8/12/24 2:00 PM G0.02a has been revised to remove references to G0.06 and G0.07.	Resolved
55	3	Life Safety Maureen McCafferty 8/9/24 2:15 PM	Changemark OSSC 107.3.4.1 Deferred submittals Please clarify if these deferred submittals are for this phase of the project or for the project as a whole. Remove any deferred submittals that are not relevant to the proposed scope of work under this phase of the project.	001.1 G0.02a - DEMO AND STRUCTURAL CODE SUMMARY.pdf	Reviewer Response: Maureen McCafferty - 8/20/24 12:46 PM Recheck 03: Resolved. --- Responded by: Willis DeWitt - 8/12/24 2:00 PM	Resolved

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					G0.02a has been revised to note the deferred submittals applicable to this permit application. Future deferred submittals for the main building permit are clearly noted as part of the main building permit application. See revised sheet G0.02a.	
56	3	Life Safety Maureen McCafferty 8/9/24 2:15 PM	Changemark OSSC 105.1 Elevator Permit Elevators are enforced by the State of Oregon Building Codes Division. Please remove these from the deferred submittal list and list them as a separate permit item.	001.1 G0.02a - DEMO AND STRUCTURAL CODE SUMMARY.pdf	Reviewer Response: Maureen McCafferty - 8/20/24 12:44 PM Recheck 03: Resolved. --- Responded by: Willis DeWitt - 8/12/24 2:00 PM G0.02a has been revised to note requirements for elevator permit application.	Resolved
57	3	Life Safety Maureen McCafferty 8/9/24 2:19 PM	Changemark 2022 OSSC 107.2.1 Drawing coordination Clarify location of opening into dive well walls with information submitted under structural submittal. Structural plans (S1.00C and S2.51) show this opening in a different location.	038 AD1.00C - DEMO PLAN - BASEMENT - SECTOR C.pdf	Reviewer Response: Maureen McCafferty - 8/20/24 12:47 PM Recheck 03: Resolved. --- Responded by: Willis DeWitt - 8/12/24 2:00 PM AD1.00C has been revised to be coordinated with structural plans. Please see revised sheet AD1.00C.	Resolved
58	3	Life Safety Maureen McCafferty 8/9/24 2:25 PM	Changemark OSSC 107.3.3 Scope Please clarify whether the pair of doors shown on Stair 5 Level 1 to the exterior and the pair of doors in Stair 5 Level 2 are new or existing. It might just be a graphic thing, but these appear like they are new under this phase of the permit. If they are proposed under this phase, please provide a door schedule with door hardware specified for these doors.	072 A4.11 - VERTICAL CIRCULATION - STAIRS.pdf	Reviewer Response: Maureen McCafferty - 8/20/24 12:54 PM Recheck 03: Resolved. --- Responded by: Willis DeWitt - 8/12/24 2:01 PM Pair of doors shown on Stair 5 Level 1 to the exterior will be replaced with the main building permit. Note has been added to detail 2/A4.11 to clarify this. Please see revised sheet A4.11. Pair of doors shown on Stair 1 Level 1 to the exterior and pair of doors on Stair 1 Level 1 to the interior will be replaced with the main building permit. Note has been added to detail 1/A4.12 to clarify this. Please see revised sheet A4.12.	Resolved

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59	3	Life Safety Maureen McCafferty 8/9/24 2:31 PM	Changemark Additional Meeting I am happy to review revised documents prior to you resubmitting the ProjectDox task back to the City. Please reach out and send an email to maureen.mccafferty@portlandoregon.gov once revised drawings have been uploaded and I can try and review updates prior to the official resubmittal.	001.3 G0.04 - PHASING DIAGRAMS.pdf		Info Only

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ASCE 41-13 SEISMIC EVALUATION REPORT

FOR

PORTLAND COMMUNITY COLLEGE
HT - HEALTH TECHNOLOGY BUILDING

12000 SOUTHWEST 49TH AVENUE
PORTLAND, OR



ABHT STRUCTURAL ENGINEERS

Main Contact: Clinton Ambrose
Project NO. 18518

March 8, 2019

Prepared For:
Hacker
1615 SE 3rd Avenue, Fifth Floor
Portland, Oregon 97214



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SECTION 1

REPORT

Introduction

ABHT Structural Engineers was retained by HACKER to conduct an ASCE 41-13 Tier 1/Tier 2 seismic evaluation of the Portland Community College (PCC) Sylvania – Health and Technology Building located at 12000 Southwest 49th Avenue in Portland, OR. The results of this evaluation will be used in structural system upgrade planning as part of the 2019 Health and Technology Building Renovation project.

The evaluation is based on the American Society of Civil Engineers (ASCE) Standard 41-13, *Seismic Evaluation and Retrofit of Existing Buildings*, commonly referred to as ASCE 41-13. The purpose of ASCE 41-13 is to provide guidance in the review of an existing building's response to a predetermined level of earthquake based on a selected performance level. This evaluation is based on Life Safety structural performance and Position Retention non-structural performance levels at the Basic Safety Earthquake-1 (BSE-1E) seismic hazard level, and an implied Limited Safety structural performance level at the Basic Safety Earthquake-2 (BSE-2E) seismic hazard level as defined by ASCE 41-13 for a risk category III building. Life safety is defined as the post-earthquake damage state in which a structure has damaged components but retains a margin against the onset of partial or total collapse. Limited Safety is defined as a post-earthquake damage state between Life Safety and Collapse Prevention. For reference, Collapse Prevention is defined as the post-earthquake damage state in which a structure has damaged components and continues to support gravity loads but retains no margin against collapse.

A typical ASCE 41-13 evaluation consists of two phases, or tiers. Tier 1 is the Screening Phase which consists of completing a series of checklists and in some cases performing Quick Check structural calculations to quickly identify potential deficiencies. The Tier 2 Phase involves further evaluation of deficiencies identified in the Tier 1 Phase evaluation where required or allowed by ASCE 41-13 and where adequate as-built information is available. This evaluation is limited to the Tier 1 Screening Phase only. A Tier 2 deficiency-based evaluation will also be performed, and the results issued under separate cover.

Along with a review of available drawings, our evaluation includes a limited walkthrough of the existing building to observe the general physical status of the structure, identification of potential structural and non-structural deficiencies based on our visual observation of structural elements readily available to view, and limited evaluation of the building's lateral force resisting system using the ASCE 41-13 Tier 1 checklists and quick check calculation procedures. For reference, we also reviewed the Seismic Evaluation Report for the Portland Community College – Sylvania Campus prepared by kpff Consulting Engineers dated January 6, 2012. The seismic evaluation performed by kpff was limited to a Tier 1 Screening Phase only, using the ASCE 31-03 Standard which was current at that time. This ASCE31-03 was superseded by ASCE 41-13, Copyrighted in 2014.

Observations, analysis, conclusions, and recommendations contained in this report reflect our best engineering judgment. Concealed problems with the construction of the building may exist that cannot be revealed through our review. ABHT Structural Engineers in no way guarantees the condition of the existing construction of the building and the building site.

Please feel free to contact our office should any questions or comments arise regarding this report.

Executive Summary

The PCC Sylvania Health and Technology Building is a 4-story approximate 185,600-sf reinforced concrete building constructed circa 1972 and designed to the requirements of the 1970 Uniform Building Code. The lateral force resisting system consists of reinforced concrete shear walls founded on pile foundations. Lateral forces at the roof and floor levels are distributed to the shear walls through rigid concrete slab diaphragms, except for a section of flexible metal deck roof diaphragm over the gym. This evaluation has identified several structural and non-structural deficiencies along with structural and non-structural unknowns due to a lack of as-built drawings, concealed conditions and site-specific Geotechnical information.

The structural deficiencies resulting from the Tier 1 screening is as follows:

1. **Vertical Irregularities:** Vertical elements of the seismic force resisting system (concrete shear walls) are not continuous to the foundation.
2. **Geometry:** The net horizontal dimension of the seismic force resisting system changes by more than 30% in a story relative to adjacent stories.
3. **Mass:** There is a change if effective mass more than 50% between the Ground and First stories.
4. **Torsion:** The estimated distance between story center of mass and story center of rigidity is greater than 20% of the building width.
5. **Slope Failure:** The building site is subject to potential earthquake-induced slope failures.
6. **Complete Frames:** Concrete frames classified as secondary components do not form a complete, independent vertical-load-carrying system; concrete shear walls are required to support vertical loads from secondary components.
7. **Shear Stress Check:** The shear stresses in the concrete shear walls exceed the maximum stress limit calculated using the Quick Check procedure.
8. **Foundation Dowels:** Concrete shear wall reinforcement is not doweled into the foundation with vertical bars equal in size and spacing to the vertical wall reinforcing immediately above the foundation.
9. **Deflection Compatibility:** Secondary components do not have the shear capacity to develop the flexural strength of the components.
10. **Coupling Beams:** The stirrups in coupling beams over means of egress do not meet the spacing or detailing requirements of the Tier 1 checklist.
11. **Uplift at Pile Caps:** Pile caps do not have top reinforcing required for uplift capacity. Steel pile concrete encasement is doweled to the pile caps; however, the steel pile is not positively anchored to the concrete encasement for uplift force transfer.
12. **Openings at Shear Walls:** Diaphragm openings immediately adjacent to the shear walls exceed 25% of the wall length.

The structural unknowns identified in this Tier 1 screening are as follows:

1. **Liquefaction:** It is unknown if liquefaction-susceptible soils exist in the foundation soils at depths within 50-feet under the building.
2. **Surface Fault Rupture:** It is unknown if the building site is susceptible to surface fault rupture.

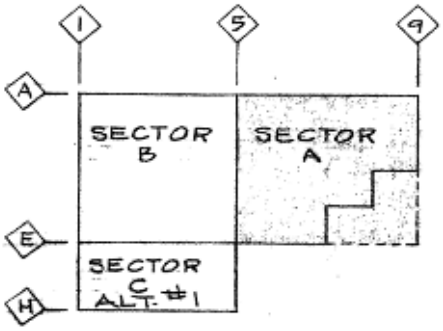
The Non-Structural deficiencies resulting from the Tier 1 screening include:

1. **Fire Suppression Piping:** Piping not anchored or braced in conformance with NFPA-13.
2. **Flexible Couplings:** Fire suppression piping does not have flexible couplings in accordance with NFPA-13.
3. **Sprinkler Ceiling Clearance:** Clearance between fire suppression devices and panelized ceilings for fire suppression do not meeting NFPA-13.
4. **Drift:** Rigid cementitious partitions are not detailed to accommodate drift.
5. **Ceilings:** Suspended acoustical tile ceilings lack lateral bracing, edge clearance and support, and separation joints.
6. **Light Fixtures:** Light fixtures supported by pendant supports lack clearance between adjacent building components. The fixtures are susceptible to damage from pounding into adjacent components during lateral sway.
7. **Tall Narrow Contents & Equipment:** Un-braced tall narrow contents and equipment.
8. **Fall Prone Contents & Equipment:** Un-braced fall-prone content and equipment.
9. **Suspended Contents/Equipment:** Lack of clearance to avoid damage due to sway.
10. **Heavy Equipment:** Equipment more than 400-lbs must be anchored to structure.

Building Structural System

The Health Technology building is a 4-story approximate 185,600-sf reinforced concrete building constructed circa 1972 and designed to the requirements of the 1970 Uniform Building Code. Although the building was constructed monolithically, the as-built drawings by Bear, McNeil, Bloodworth & Hawes Architects dated July 1, 1970 separated the building into three sectors described as follows:

- Sector A – Academic Wing on east half of building
- Sector B – Gym on west half of building
- Sector C – Pool on south-west corner of building



The following are structural system descriptions by Sectors:

Sector A:

1. Roof: Reinforced concrete waffle slabs, concrete joists and beams supported by concrete columns and walls. Concrete encased steel plate girders occur at the skylight opening. Timber framing was used at the skylight as ornamentation.

2. First and Second Floors: Reinforced concrete waffle slabs, concrete joists and beams supported by concrete columns and walls. Concrete encased steel plate girders occur at the stair opening.

3. Ground Floor: Reinforced concrete slab-on-grade.

4. Foundations: Concrete encased steel piles or reinforced concrete caissons.

5. Lateral Force Resisting System: Reinforced concrete shear walls.

6. Story Height: Typical story height is 14’-6”.

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Sector B:

1. Roof: Steel plate girder and wide flange beams overlain by 1 ½"-20 gage metal roof decking over the gym supported by concrete columns and walls. Small sections of reinforced concrete waffle slabs occur at the north-east and south-east corners of the roof.

2. Ground, First and Second Floors: Reinforced concrete waffle slabs, concrete joists and beams supported by concrete columns and walls.

3. Basement Floor: Reinforced concrete slab-on-grade.

4. Foundations: Concrete encased steel piles or reinforced concrete caissons.

5. Lateral Force Resisting System: Reinforced concrete shear walls.

6. Story Height: Typical story height is 14'-6". Story height between First level and Roof at Gym is 30'-0".

Sector C:

1. Roof: Precast, prestressed concrete channel sections supported by concrete beams, columns and walls.

2. Ground Floor: Reinforced concrete joists and beams supported by concrete columns and walls.

3. Basement: Reinforced concrete slab-on-grade.

4. Foundations: Concrete encased steel piles or reinforced concrete caissons.

5. Lateral Force Resisting System: Reinforced concrete shear walls.

6. Story Height: Story height between Ground floor and Roof is 28'-9". Story height between Basement and Ground floor ranges between 8'-0" to 14'-6".

Structural Evaluation

ASCE 41-13

As previously stated, we have evaluated the existing structure using ASCE 41-13, Seismic Evaluation of Existing Buildings. This nationally recognized standard provides a three-tiered process for seismic evaluation of existing buildings. This report is limited to the Tier 1 Screening Phase only. Tier 1 consists of completing structural and non-structural checklists and performing limited calculations in order to screen out buildings and/or components that comply with the provisions of the standard and to identify potential seismic deficiencies within the building. Deficiencies found in Tier 1 may be further evaluated using a Tier 2 deficiency-based evaluation procedure. Items found to be deficient after a Tier 2 evaluation would require mitigation to comply with the ASCE 41-13.

The ASCE 41-13 provides for the evaluation of a building based on a selected Performance Objective which consists of one or more pairings of a selected seismic hazard level with a target Structural performance level and a Non-Structural performance level. The Basic Performance Objective for Existing Buildings (BPOE) was selected for this evaluation. The BPOE's target performance levels are Life Safety structural performance and Position Retention Non-structural performance at the BSE-1E seismic hazard and Limited Safety Structural Performance at the BSE-2E seismic hazard for a Risk Category III building.

Life safety is defined as the post-earthquake damage state in which a structure has damaged components but retains a margin against the onset of partial or total collapse. Limited Safety is defined as a post-earthquake damage state between Life Safety and Collapse Prevention. For reference, Collapse Prevention is defined as the post-earthquake damage state in which a structure has damaged components and continues to support gravity loads but retains no margin against collapse.

The Tier 1 screening phase (and Tier 2 evaluation phase when applied) are based on the Basic Safety Earthquake-1 (BSE-1E) seismic hazard level, which is based on an earthquake with a 20% probability of exceedance in 50 years. This is an earthquake with a mean return period of approximately 225 years. For Tier 1 and Tier 2 evaluations, seismic performance for the BSE-2E seismic hazard is not explicitly evaluated. The Basic Safety Earthquake-2 (BSE-2E) seismic hazard level is based on an earthquake with a 5% probability of exceedance in 50 years. This is an earthquake with a mean return period of approximately 975 years.

ASCE 41-13 categorizes seismicity, or potential for strong ground motion at a site, into four levels based on site specific acceleration parameters. The four levels are Very Low, Low, Moderate, and High. The building site is located in a region of HIGH seismicity.

ASCE 41-13 defines a Benchmark Buildings as a building designed and constructed based on acceptable seismic code provisions that can be verified through observation and documentation. Benchmark buildings are deemed to meet the Basic Performance Objective for Existing Buildings (BPOE); however, the non-structural performance must still be evaluated. The range of years (1970-1972) within which the building was designed and constructed precede the 1994 Uniform Building Code; the code which the building is required to be designed and constructed in conformance with to be classified as a Benchmark Building. Therefore, the building is not a Benchmark Building.

The building has been classified as Building Type C2, Concrete Shear Wall Building with Rigid or Flexible Diaphragms. Based on this classification, the appropriate checklists were used to perform the Tier 1 Screening. Within the Tier 1 checklists, items are identified as “C” (Compliant), “NC” (Non-Compliant), “N/A” (Not Applicable), or “U” (Unknown). Non-Compliant items (or deficiencies) are summarized in the Evaluation Results section of this report. The completed checklists can be found in Section 3 of this report.

Evaluation Results

ASCE 41 – TIER 1 POTENTIAL SEISMIC DEFICIENCIES

The following table provides a list of potential seismic deficiencies found for both structural and non-structural items.

#	Item Name	Potential Seismic Deficiency
		Structural Deficiencies
1	Vertical Irregularities	Vertical elements of the seismic force resisting system (concrete shear walls) are not continuous to the foundation. This condition occurs in Sectors A and B.
2	Geometry	The net horizontal dimension of the seismic force resisting system changes by more than 30% in a story relative to adjacent stories. This occurs at the Ground Floor and Basement of Sectors A and B respectively.
3	Mass	There is a change in effective mass more than 50% between the Ground and First Floors.
4	Torsion	The estimated distance between story center of mass and story center of rigidity is greater than 20% of the building width.
5	Slope Failure	The building site contains steep slopes which may slide during an earthquake resulting in excessive building deformation. The building is also susceptible to impact from sliding soil and debris.
6	Complete Frames	Concrete frames classified as secondary components do not form a complete, independent vertical-load-carrying system. There are conditions where concrete shear walls are required to support vertical loads from secondary components.
7	Shear Stress Check	The shear stress in the concrete shear walls calculated using the Quick Check procedure exceeds the greater of 100 psi or $2\sqrt{f'c}$. This deficiency occurred in the East-West direction of Sector's A and B and in the North-South direction of Sector C.
8	Foundation Dowels	Concrete shear wall reinforcement is not doweled into the foundation with vertical bars equal in size and spacing to the vertical wall reinforcing immediately above the foundation. Majority of the walls have single rebar dowels which do not match the wall vertical reinforcing.
9	Deflection Compatibility	Secondary components (concrete columns and beams) do not have the shear capacity to develop the flexural strength of the components.
10	Coupling Beams	The stirrups in coupling beams over means of egress do not meet the spacing or detailing requirements of the Tier 1 checklist.
11	Uplift at Pile Caps	Pile caps do not have top reinforcing required for uplift capacity. Steel pile concrete encasement is doweled to the pile caps; however, the steel pile is not positively anchored to the concrete encasement for uplift force transfer.

12	Openings at Shear Walls	Diaphragm openings immediately adjacent to the shear walls exceed 25% of the wall length.
	Non-structural Deficiencies	
1	Fire Suppression Piping	Piping not anchored or braced in conformance with NFPA-13.
2	Flexible Couplings	Fire suppression piping does not have flexible couplings in accordance with NFPA-13.
3	Sprinkler Ceiling Clearance	Clearance between fire suppression devices and panelized ceilings for fire suppression do not meet NFPA-13.
4	Drift	Rigid cementitious partitions/rigid CMU partition walls are not detailed to accommodate drift.
5	Ceilings	Suspended acoustical tile ceilings with continuous area greater than 144 square feet require lateral bracing at 12 feet on center in each direction. The edges must have ¾ inch clearance from the enclosing walls and be supported by closure angles or channels not less than 2 inches wide.
6	Light Fixtures	Light fixtures supported by pendant supports lack clearance between adjacent building components. The fixtures are susceptible to damage from pounding into adjacent components during lateral sway.
7	Tall Narrow Contents	Contents more than 6 feet high with a height-to-depth ratio greater than 3-to-1 are not anchored to the structure. During a seismic event these contents could fall and cause damage or harm to occupants.
8	Fall-Prone Contents	Equipment, stored items, or other contents weighing more than 20 lbs whose center of mass is more than 4 feet above the adjacent floor level is not properly braced. These items could fall during a seismic event and cause damage or harm to occupants.
9	Suspended Content/Equipment	Items suspended from the structure without lateral bracing needs to be free to swing without damaging themselves or adjacent components.
10	Fall-Prone Equipment	Equipment weighing more than 20 lbs whose center of mass is more than 4 feet above the adjacent floor level is not properly braced. These items could fall during a seismic event and cause damage or harm to occupants.
11	Tall Narrow Equipment	Equipment more than 6 feet high with a height-to-depth ratio greater than 3-to-1 are not anchored to the structure. During a seismic event these contents could fall and cause damage or harm to occupants.
12	Heavy Equipment	Floor supported or platform supported equipment weighing more than 400 lb needs to be anchored to the structure.

ASCE 41 – TIER 2 EVALUATION

A Tier 2 deficiency-based evaluation will be performed, and the results issued under separate cover.

Recommended Course of Action

The following is recommended action item list to mitigate the structural and non-structural deficiencies discovered through the Tier 1 Screening phase. Deficiency-based structural system upgrades shall be designed in accordance with the ASCE 41-13 Basic Performance Objective for Existing Buildings (BPOE). Should existing structural elements require retrofit as a result of the deficiency-based retrofit solution, we recommend that all structural upgrades be designed in accordance with the current edition of the Oregon Structural Specialty Code (currently the 2014 OSSC) or the ASCE 41-13 Basic Performance Objective for New Buildings (BPON).

1. Perform a more in-depth lateral analysis of the existing structure using ASCE 41-13 Tier 2 deficiency-based evaluation procedures to determine if the deficiencies identified in the Tier 1 screening phase still exist. The Tier 2 evaluation will include 3-D building modeling to better understand the building's lateral system behavior and distribution of lateral forces through the structure.

2. At Sector A, add new concrete shear walls and associated foundations from Ground Floor to underside of Roof in the East-West directions. The addition of new shear walls will change the lateral force distribution throughout the building. The structural adequacy of the existing lateral force resisting elements (concrete shear walls, diaphragms, etc.) shall be reviewed to ensure that their demand/capacity ratio after building modifications is less than 10 percent greater than their demand/capacity ratio prior to building modifications for the existing elements to remain unaltered.

3. At Sector C, add new concrete shear walls and/or retrofit the existing concrete shear walls in the North-South direction.

4. Where necessary, provide additional diaphragm collectors and reinforcing as required to transfer lateral forces from diaphragms to new concrete shear walls.

5. Retrofit fire suppression/sprinkler systems to comply with NFPA-13 requirements.

6. Retrofit ceiling systems including the addition of seismic bracing, edge clearance and support, and seismic joints.

7. Review and retrofit existing partition wall construction to provide drift compatibility and lateral bracing.

8. Provide positive anchorage and bracing for tall narrow contents and fall prone contents and equipment.

9. Provide lateral bracing for hanging lights and equipment.

10. Positively anchor heavy equipment to the concrete slab on grade or surrounding structure.

SECTION 2

PHOTOS AND PLANS



NORTH ELEVATION



PARTIAL SOUTH ELEVATION



SOUTH ENTRY ELEVATION



WEST ELEVATION



WEST ELEVATION AT POOL PATIO



POOL INTERIOR VIEW



INTERIOR WEST WALL OF GYM



SKYLIGHT



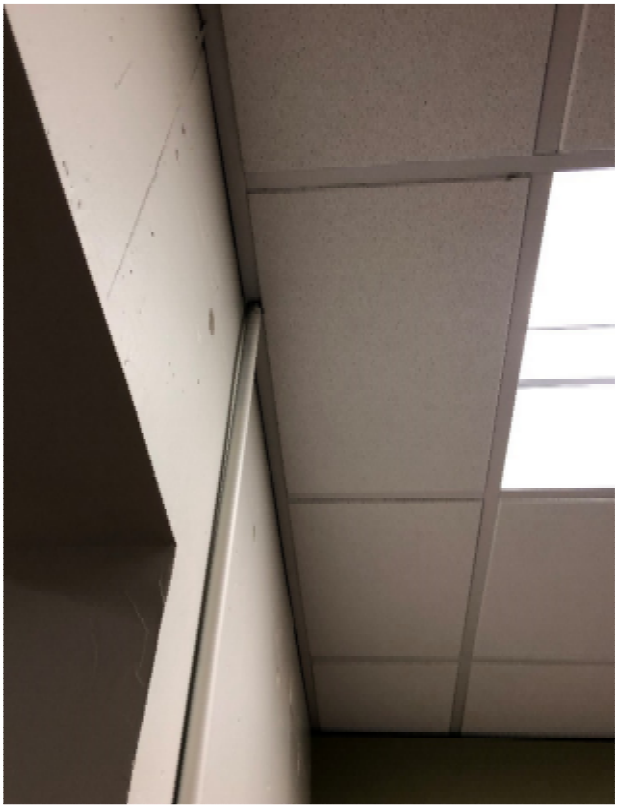
ELEVATOR AT CIRCULATION ATRIUM



ELEVATOR WALL



RIDGID PARTITON TIGHT TO STRUCTURE



CEILING GRID EDGE TIGHT TO WALLS



CEILING GRID EDGE SUPPORT



PENDANT SUPPORTED LIGHT FIXTURE



TALL STORAGE RACKS



TALL NARROW UNBRACED CABINET



FALL PRONE CONTENT



UNBRACED HVAC UNIT



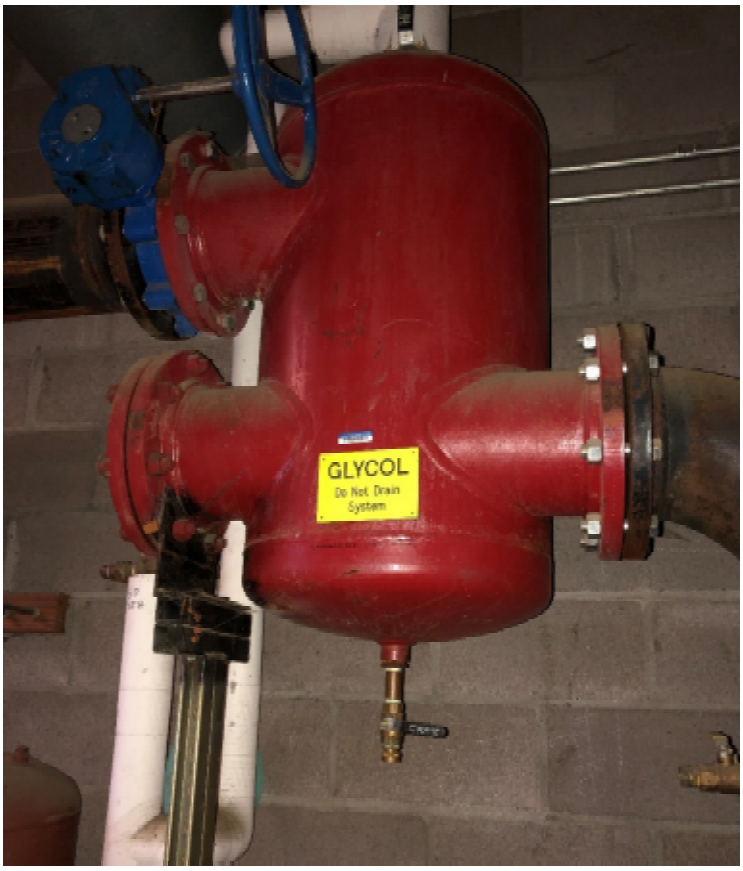
TALL ELECTRICAL PANEL WITH NO VISIBLE ANCHORAGE



TANK STRAPPED TO MECHANICAL DUCTING



HEAVY TANK WITH NO ANCHORAGE TO FLOOR



UNBRACED GLYCOL SYSTEM COMPONENT



UNBRACED HANGING PIPE SUPPORT



UNRESTRAINED CHLORINE BLEACH CONSTAINERS

FOUNDATION & GROUND FLOOR PLAN/SECTOR A

PHASE III - HEALTH SCIENCES BUILDING

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND, OREGON

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH — ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET — PORTLAND, OREGON

JOB NO. 69-13D — DATE July 1, 1970

REVISIONS

SHEET NO. S-4

STAIR #4 Dwg. S-32 — STAIR #6 Dwg. S-22 — STAIR #5 — STAIR #2 Dwg. S-30

TOILET TOWER Dwg. S-33

SIDEWALK: 4" SLAB ON GRADE 6x6-6/6 WWM SEE ARCH. DWGS. FOR SCORING.

12" CONC. WALL #6 @ 8" VERT. 1 CLR SOUTH FACE #5 @ 12" HORIZ.

¼" EXP. JOINT FILLER — EXP. JT. — TYP.

TOP OF GR. BM. EL. 621'-0" — ½" STEP (TYP.)

FOR WAFFLE SLAB REINF. SEE GROUND FL. PLAN OF SECTOR B — EL. 622'-3½"

EL. 622'-6" — DEPRESS 2½"

BASE CONNECTION SIM. TO — TOP OF GR. BM. EL. 616'-0"

DEPRESS THIS AREA 2½"

NO FLOOR IN THIS AREA. SEE ARCH. DWGS. FOR FINISH GRADING

6" SLAB ON 6" MIN. COMPACTED SELECTED FILL. REINF. W/#5 @ 12" EW 1½" CLR. @ TOP

#6 @ 12" VERT. I.F. #4 @ 12" HORIZ. I.F. #4 @ 12" HRZ. O.F.

3'-0" x 1'-0" FTG. #4 @ 12" TRANS. 3#4 LONGIT.

2'-0" x 1'-0" FTG. 3#4 LONGIT. #4 @ 24" TRANS.

GR. BM. SLOPES — SLOPE ON GR.

EL. 619'-0" — 10'-0" ℄ ROOM — 10'-0"

24"-18" MECH. OPNG. BOTT. OF OPNG. @ EL. 619'-6"

ELEVATOR SEE S-30

4'-0" X 5'-0" OPENING

15" x 12" BM W/2-#6

MECHANICAL OPENING ABOVE

WALL REINF.: (TYP.) #6 @ 8" VERT. 1" CLR. I.F. #5 @ 12" HORIZ. @5 x 40'-0" ℄ #2 TIES @ 18" ℄ BTM. OF WALL (SIM. TO 3/S-13)

#5 x 10'-0" @ 12", 2" CLR. O.F. 5#4 VERT

NO C.J.

DETAIL 5/S-4

Concrete block is to be flush on future classroom side on line 7.

GR. BM. LEVEL 621

6" x 20'-0" ℄ #2 TIES @ 18" SIM. TO 3/S-13 EXCEPT @ TOP OF WALL

6" SLAB ON 6" MIN. COMPACTED SELECTED FILL. REINF. WITH #5 @ 12" E.W. 1½" CLR. OF TOP. EL. 622'-6"

6" SLAB ON 6" MIN. COMPACTED SELECTED FILL. REINF. WITH #5 @ 12" E.W. 1½" CLR. OF TOP. EL. 622'-3½"

6" SLAB ON 6" COMPACTED SELECTED FILL. REINF. WITH #5 @ 12" E.W. 1½" CLR. OF TOP.

EL. 622'-2¾"

ELEV. 622'-6"

WALL REINF.: (TYP.) #6 @ 8" VERT. 1" CLR. I.F. #5 @ 12" HORIZ. @9 x 40'-0" ℄ #2 TIES @ 18" ℄ BTM. OF WALL (SIM. TO 3/S-13)

2'-0" x 2'-0" GRADE BEAM W/4#11 & #3 TIES @ 18" (TYPICAL ALL GR. BMS.)

GR. BM. LEVEL 631'-0" — 631'-0" ADD — 631'-0"

TOP OF GR. BM. EL. 613'-0" — TOP OF GR. BM. EL. 619'-0"

FTG. 7'-4" x 13'-0" x 1'-0" ℄ EL. 616'-0" SEE SEC. 5/S-8

BOT. OF TNL. EL. 617'-0" — BOT. OF TNL. EL. 619'-6"

SECTION 1 / S4 — ½" = 1'-0"

GROUND FL. EL. 622'-6" — SELECTED BACKFILL — 10" — 2"

SECTION 2 / S4 — ½" = 1'-0"

STAIR #3 FTG SEE SHEET S-31

GRID LINE — VARIES — 2'-0"

SECTION 3 / S4 — ½" = 1'-0"

#5 x 2'-0" @ 15'

8" CONC. WALL — FUTURE FLR — GRADE BM.

CHANGE PER DRAWING No. SK-1 (ADDENDUM)

SECTION 5 / S-4 — ½" = 1'-0"

TYP TEMP. #5 — #5 x 39'-5" @ 12" — #5 x 9'-0" @ 12" — #4 x 13'-6" @ 15' TYP TEMP. — TOPPING NOT SHOWN TYP.

#5 x 13'-6" @ 10" — #5 x 14'-6" @ 10"

#5 @ 12" — 4'-6" — WB REINF. — BM REINF. SAME AS (10/S-34)

18'-2" — 2-#6

#5 @ 15" EA. WAY — 2" CLR.

WATER-STOP SEE SPEC. — 622'-6" — #3 @ 12" EA WAY — EXP. J. W/ WATER-STOP

2" NET x 5 NET KEY — 620'-0" — 3'-0" — 2'-0"

SECTION 6 / S-4 — ¼" = 1'-0"

STAIR #2 FTG. SEE SHEET S-31

25'-5"

SHEET NO. S-4 FOUNDATION AND GROUND FLOOR PLAN SECTOR A

Change elevations at caissons D9 and E8 from (621'-0") to (631'-0").

On Line E from 7 to 9: Grade beam level, top at 631'-0"
On Line D from 8 to 9: Grade beam level, top at 631'-0"
On Line C from 8 to 9: Grade beam level, top at 621'-0"
On Line 8 from D to E: Grade beam level, top at 631'-0"
On Line 9 from C to E: Grade beam level, top at 631'-0"

WHERE REQ'D FOR CONSTRUCTION: VERTICAL C.J. IN FIRST STORY OF ALL WALLS SHALL BE MADE MIDWAY BETWEEN COLUMNS. HORIZ. WALL REINF. SHALL BE SPLICED @ C.L. ONLY.

FLOOR ELEVATIONS SHOWN ARE TO TOP OF STRUCTURAL FLOOR. SEE ARCH. DWGS. FOR ELEVATIONS OF FINISH FLOOR

N — W — E — S

SECTOR B — SECTOR A — SECTOR C ALT. #1

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REGISTERED PROFESSIONAL ENGINEER 4326 — STATE OF OREGON — SAMUEL M. BURGSTAHLER

SHEET NO. S-4

FIRST FLOOR PLAN / SECTOR A

PHASE III - HEALTH SCIENCES BUILDING

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
ASSOCIATE ARCHITECTS
PETERSON & SMITH
5502 N.E. GLISAN STREET PORTLAND, OREGON

REVISIONS
1 GENERAL REVISIONS — 12-15-70

JOB NO. 69-15D
DATE July 1, 1970

SHEET NO.
S-5

C. V. BURGSTAHLER
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PORTLAND, OREGON 97201

NOTE: ELEVATIONS SHOWN ARE TO TOP OF STRUCTURAL FLOOR UNLESS OTHERWISE NOTED

SECTION 1 / S-5 — ½" = 1'-0"
SECTION 2 / S-5 — ½" = 1'-0"
SECTION 3 / S-5 — ½" = 1'-0"
SECTION 4 / S-5 — ½" = 1'-0"

MATCH LINE

NOTE
SEE ARCHITECT'S PLANS FOR SCUPPER LOCATIONS.

SECTION
SCALE 1"=1'-0"

KEYWAY

#5 AT EACH JOIST OR #4 @ 12" c. WHERE JOIST PARALLEL. SEE DET.

1" CLEAR

2" CLEAR

SECTOR A

SECTOR B

SECTOR C

PHASE III - HEALTH SCIENCES BUILDING	SECOND FLOOR PLAN/SECTOR "A"	JOB NO. 69-130	DATE JULY 1, 1970
PORTLAND COMMUNITY COLLEGE 12000 SOUTHWEST 49TH AVENUE PORTLAND OREGON	BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS PETERSON & SMITH ASSOCIATE ARCHITECTS 5502 N. E. GLISAN STREET PORTLAND, OREGON	REVISIONS 1 GENERAL REVISIONS 12-15-70	

SHEET NO. S-9

ROOF PLAN/SECTOR A

SKYLIGHT ROOF

1/8" = 1'-0"

SECTION 2

1/2" = 1'-0"

SECTION 3

1" = 1'-0"

REINF. TYP. 4 PLACES

ROOF OF STAIR #3 OMITTED

ROOF OF STAIR #2 OMITTED

STAIR #6 DWG. S-22

STAIR #8 DWG. S-24

STAIR #4 DWG. S-32

STAIR #1 DWG. S-30

MEN'S TOILET TOWER DWG. S-33

WOMEN'S TOILET TOWER DWG. S-33

PRECAST FACIA NOT SHOWN

EDGE OF JOIST

END OF BM.

END OF JOISTS

EL. VARIES 665'-9½" TO 666'-0½" SEE ARCH. ROOF PLAN

EL. 665'-9½"

EL. 666'-2½"

BM. MK. R-B/5-6

BM. MK. R-5A/BC

BM. MK. R-5B/CD

BM. MK. R-6/5-6

SEE DWGS. S-8 & S-9

FOR FRAMING OF ROOF OVER SEE 1/S-7

DOWELS SEE S-5-9

2-#6 DOWELS BAJST. TYP.

2-#6 x 8'-0" DOWELS EA JST. TYP.

32"ϕ MECH. OPNG.

14"ϕ MECH. OPNG. W/CURB

4"ϕ MECH. OPNG. W/CURB

3⅜"x14" MECH. OPNG. W/CURB

6'-0"x10'-0" MECH. OPNG.

30"ϕ x 14" DOME PAN

2-#7 SHEAR BARS TYP.

5-#3 STIRR @ 9" EA END TYP.

5" POUR HOLES (TYP.)

TYP STIRR.

5¼x16½ G/L COMB. A

2x4 NAILING STRIP

#4@12" EW

#4@16" ST. E.W

#5 STIRRUPS @ 10"

#5 @ 10"

2-#5 W/STD HK @ TOP

2-#5 W/ 3'-0" HK @ TOP

C.J. THRU BY (5)

C.J. THRU BY (6)

DOWELS SEE S-5-9

TYP.

SIM.

SIM.

SIM

PORTLAND COMMUNITY COLLEGE
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PORTLAND OREGON

PHASE III - HEALTH SCIENCES BUILDING

FOUNDATION & BASEMENT PLAN / SECTOR B

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JOB NO. 69-13-D
DATE JULY 1, 1970

SHEET NO. S-11

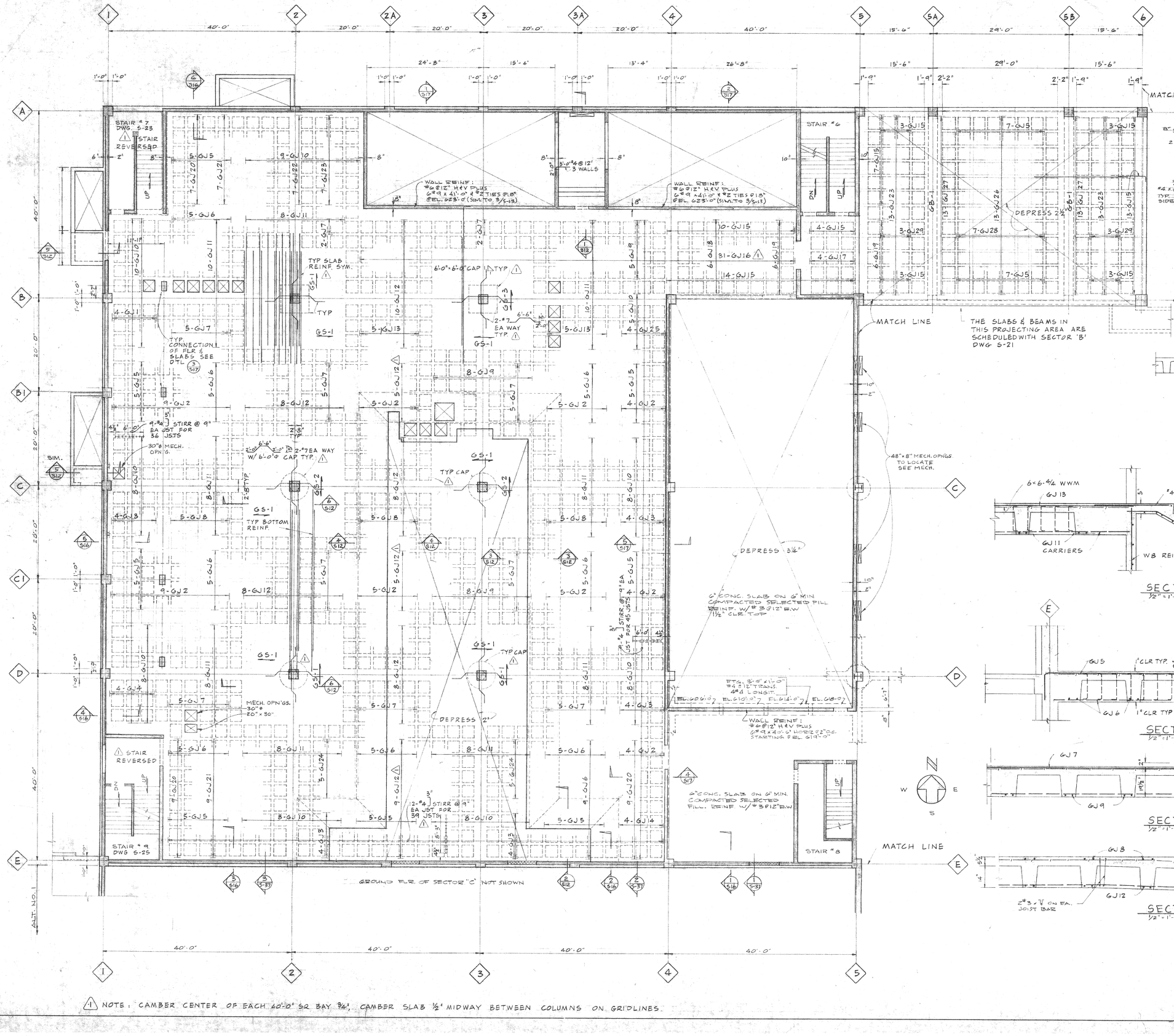
C.V. BURGETHEIER
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PORTLAND, OREGON 97205

WHERE SHOWN FOR CONSTRUCTION JOINT VERTICAL KEY IN FIRST STORY SLAB WAY BE SHIFTED TO SUIT SHEAR WALL BAR BETWEEN COLUMNS. HORIZ. WALL REINF. SHALL BE SPLICED @ 2ND FLOOR

SECTOR A
SECTOR B
SECTOR C

SECTION 6 S11 1/4" = 1'-0"
SECTION 1 S11 1/8" = 1'-0"
SECTION 4 S11 1/2" = 1'-0"
SECTION 2 S11 1/2" = 1'-0"
SECTION 3 S11 1/2" = 1'-0"
DETAIL 5 S11 1/2" = 1'-0"
DETAIL 3 S11 1/2" = 1'-0"

4066
19602


STAIR #7 DWG. S-25
STAIR REVERSED
STAIR #6
WALL REINF: #4@12" HRV PLUS 6"#9 x 41'-0" #2 TIES @18" BEL. 623'-0" (SIM. TO 3/S-13)
3'-0"#4@12" T.S WALLS
TYP SLAB REINF. SYM.
6'-0"x6'-0" CAP TYP.
2-#7 EA WAY TYP.
TYP. CONNECTION OF FLR. & SLABS SEE DTL
9-#4 J STIRR @ 9" EA JST FOR 36 J5T5
30"ø MECH. OPN'G.
2'-0"x6'-6" W/ 6'-0"ø CAP TYP.
2-#7 EA WAY
TYP CAP
TYP BOTTOM REINF.
MECH. OPN'GS. 30"ø 20"x30"
STAIR REVERSED
STAIR #9 DWG S-25
GROUND FLR. OF SECTOR "C" NOT SHOWN
MATCH LINE
THE SLABS & BEAMS IN THIS PROJECTING AREA ARE SCHEDULED WITH SECTOR 'B' DWG S-21
48"x8" MECH. OPNGS. TO LOCATE SEE MECH.
DEPRESS 3¾"
6" CONC. SLAB ON 6" MIN COMPACTED SELECTED FILL REINF. W/#3@12" E.W 1½" CLR. TOP
DEPRESS 2"
6" CONC. SLAB ON 6" MIN. COMPACTED SELECTED FILL. REINF W/#3@12"EW
STAIR #8
MATCH LINE
ALT. NO. 1
NOTE: CAMBER CENTER OF EACH 40'-0" SQ BAY ¾", CAMBER SLAB ½" MIDWAY BETWEEN COLUMNS ON GRIDLINES.
MATCH LINE
EXTEND WAFFLE SLAB REINF 2'-0" OR USE 5'-0" #4, TO DOWEL @ 12" @ AIRWAY SLAB ROOF
8" OR 10" WALL
2 x 4 KEY
#4 x 2'-0" @ 12" TYP. 2 OR 3 SIDES
2-#5 IN 12" BM.
#4@ 12 E.W. TYP.
SLAB AND WALL REINF NOT SHOWN
SECTION 5/S12 1/2" = 1'-0"
2'-0"x2'-0" COL.
2-#7 2'-0" EA WAY TYP.
REINF IN WAFFLE NOT SHOWN
6'-0"ø CAP
ø 2'-0" COL
1 CAP REVISED
SECTION 6/S12 1/4" = 1'-0"
6x6-4/4 WWM
GJ13
#4@12"x2'-0"
#4x10'-9" EA STEP
GJ11 CARRIERS
W8 REINF.
#4@8"x10'-9"
3-#4 DOWELS EA SIDE OF OPENING
4-#4@18" & 3-#4 EA SIDE OF OPENING
SECTION 1/S12 1/2" = 1'-0"
6x6-4/4 WWM (TYP.)
GJ5
1" CLR TYP.
GJ6
1" CLR TYP
1 STIRRUPS REVISED
2#3x V ON EA. JOIST BAE
SECTION 2/S12 1/2" = 1'-0"
GJ7
TYP WWM
GJ9
GJ6
2#3x V ON EA. JOIST BAR.
SECTION 3/S12 1/2" = 1'-0"
GJ8
TYP. WWM
GJ12
2#3x V ON EA. JOIST BAE
SECTION 4/S12 1/2" = 1'-0"
SECTOR B
SECTOR A
SECTOR C
ALT #1
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OREGON
Samuel M. Holmes
EXPIRES: JUNE 30, 1970
SHEET NO.
S-12
PHASE III - HEALTH SCIENCES BUILDING
GROUND FLOOR PLAN/SECTOR B
PORTLAND COMMUNITY COLLEGE
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JOB NO. 69-13-D
DATE July 1, 1970
REVISIONS
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PHASE III - HEALTH SCIENCES BUILDING

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

FIRST FLOOR PLAN/SECTOR B

BEAR, MCNEIL, BLOODWORTH & HAWES ARCHITECTS
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JOB NO. 69-13B | DATE JULY 1, 1970

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SHEET NO. S-13

SECTION 2 S-13 — 1/2"=1'-0"

SECTION 3 S-13

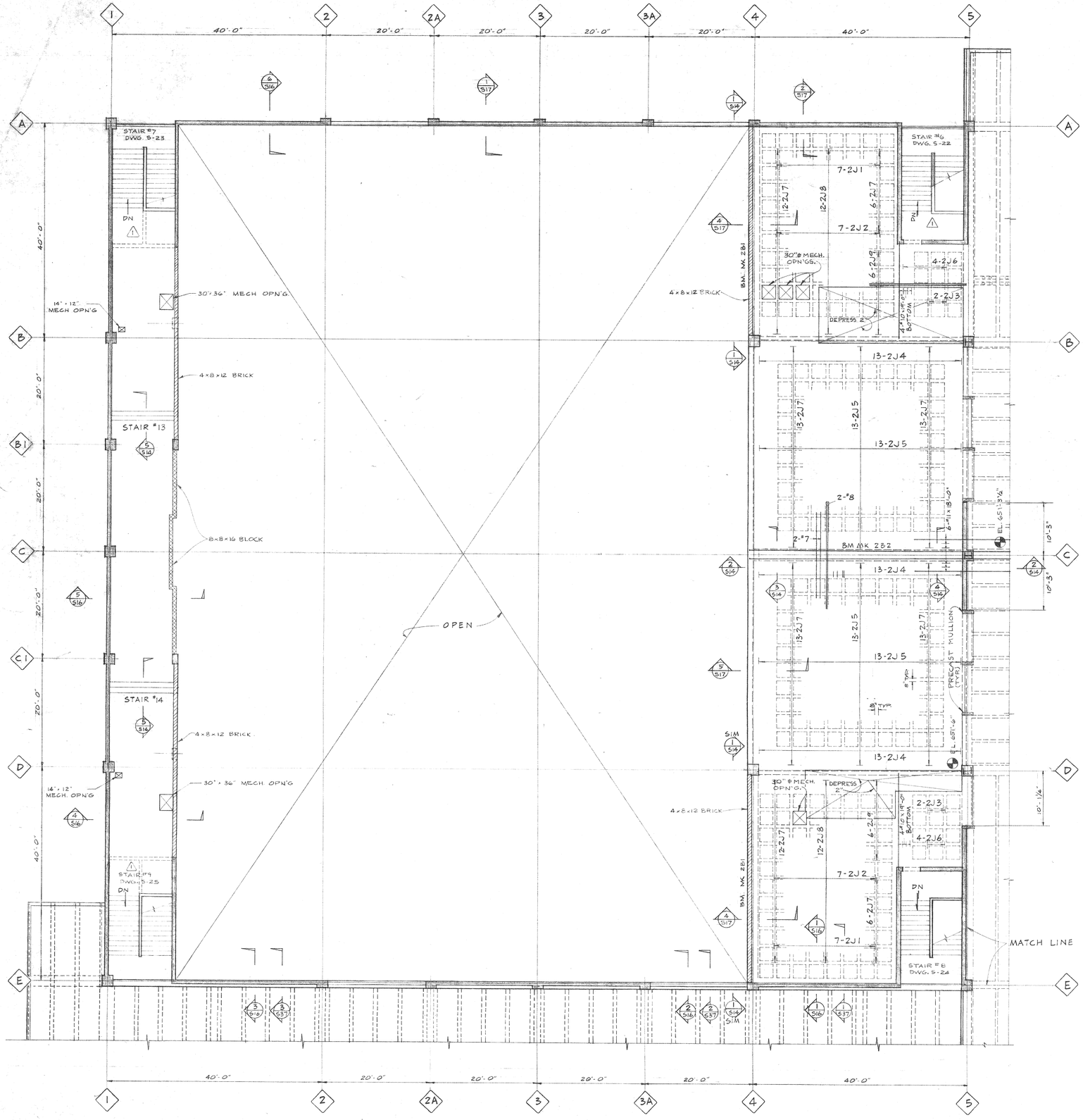
SECTION 3 S-13

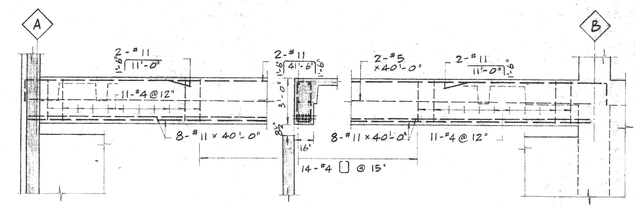
PLAN-ELEVATED FLOOR AT STAGE & STORAGE ROOM 1 S-13 — 1/8"=1'-0"

NOTE: ELEVATIONS SHOWN ARE TO TOP OF STRUCTURAL FLOOR. SEE S-2 FOR SLAB ELEVATION OF FINISH FLOOR.

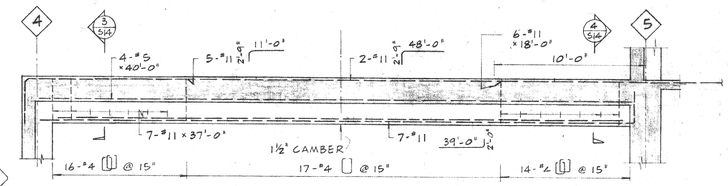
BALCONY NOT IN BASIC BID SEE ALT. #1

ALT. NO. 1

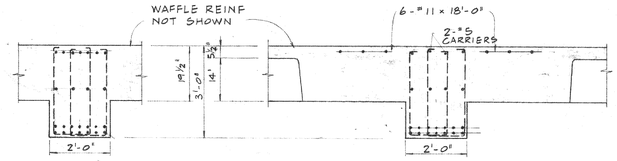




SECTION (1/514) BM. MK. 2B1
1/4" = 1'-0"

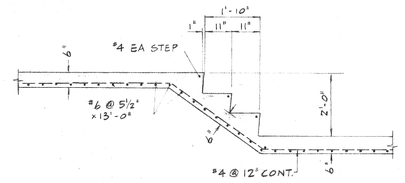


SECTION (2/514) BM. MK. 2B2
1/4" = 1'-0"

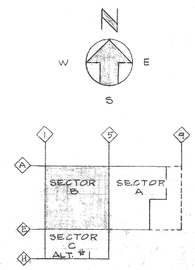


SECTION (3/514)
1/2" = 1'-0"

SECTION (4/514)
1/2" = 1'-0"



SECTION (5/514)
1/2" = 1'-0"



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4504 S. W. GORHETT
PORTLAND, OREGON 97201

JOB NO. 69-13-D
DATE JULY 1, 1970
REVISIONS
1 GENERAL REVISIONS 12-15-70

SECOND FLOOR PLAN / SECTOR B

PHASE III-HEALTH SCIENCES BUILDING

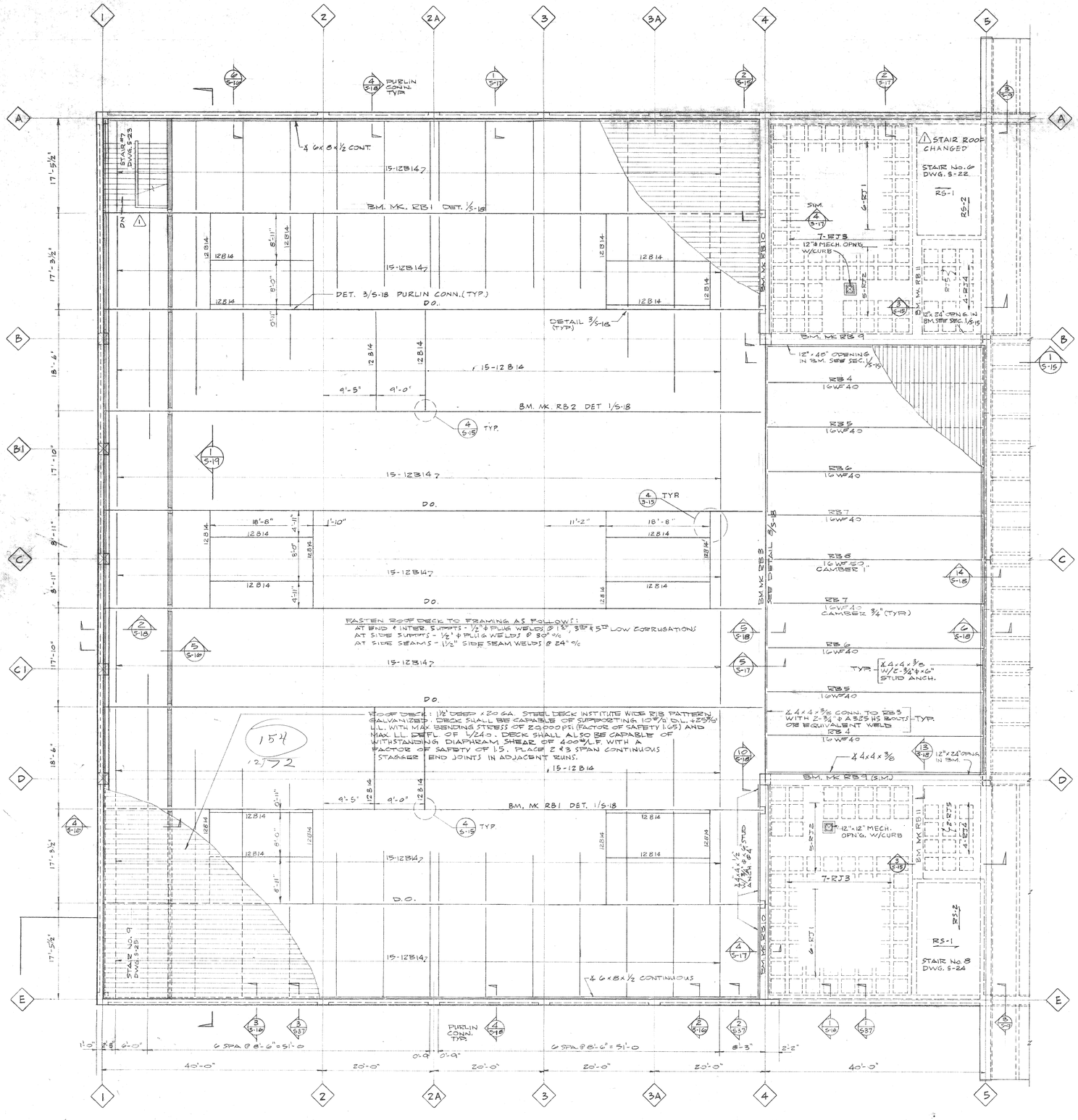
PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

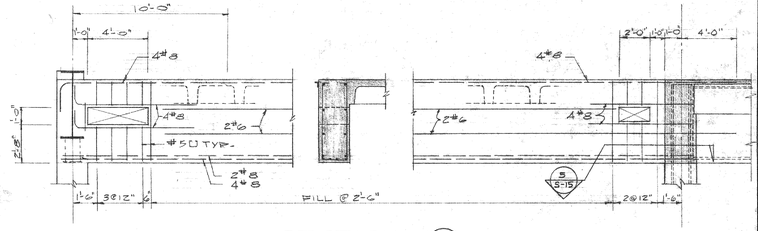
BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

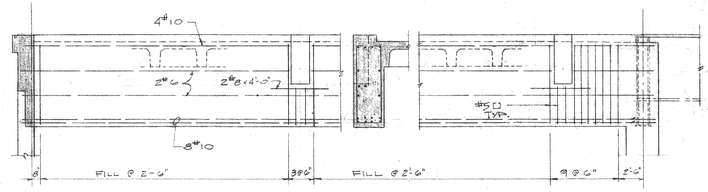
REGISTERED ARCHITECT
STATE OF OREGON

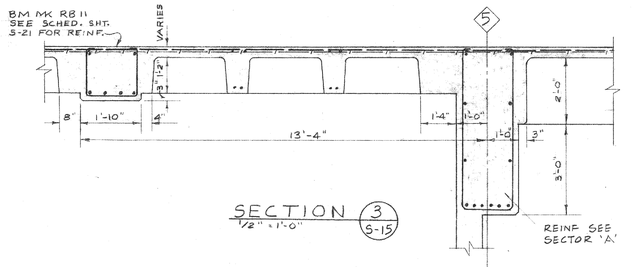
REGISTERED PROFESSIONAL ENGINEER
STATE OF OREGON
JULY 24, 1970
SAMUEL M. HUNTER

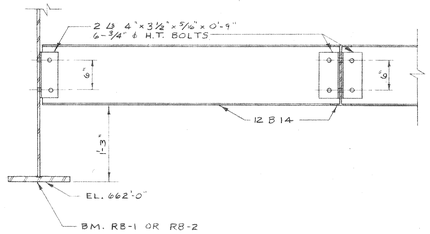
SHEET NO.
S-14

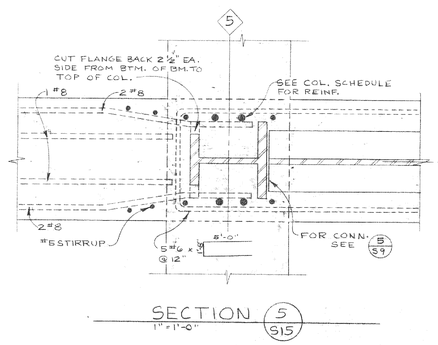


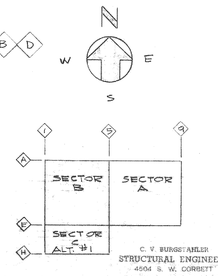












C. V. BURGSTAHLER
STRUCTURAL ENGINEERS
4004 S. W. CORBETT
PORTLAND, OREGON 97201

JOB NO. 69-13-D DATE JULY 1, 1970

REVISIONS
1 GENERAL REVISIONS 12-15-70

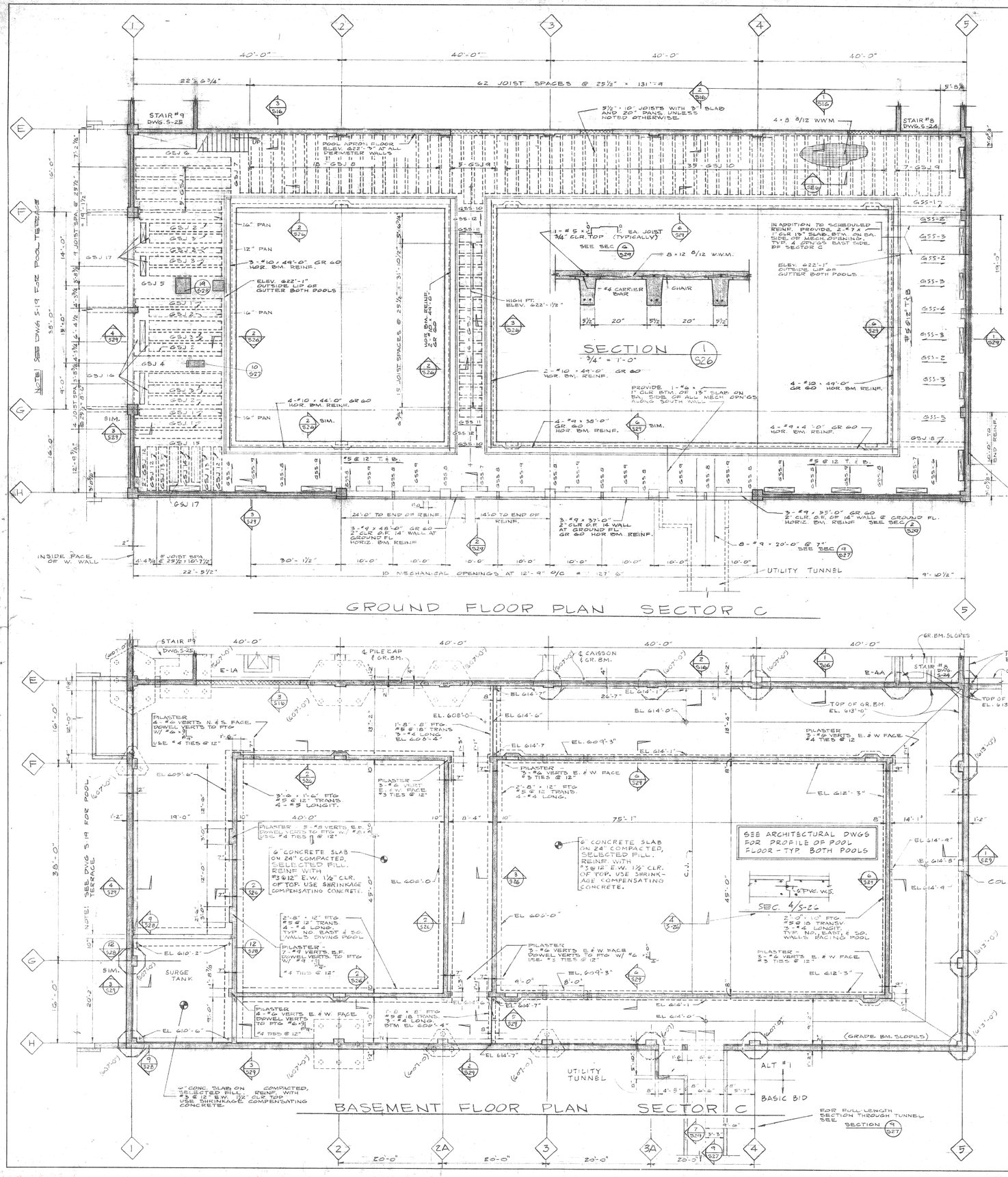
BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N.E. GLISAN STREET PORTLAND, OREGON

PHASE III - HEALTH SCIENCES BUILDING

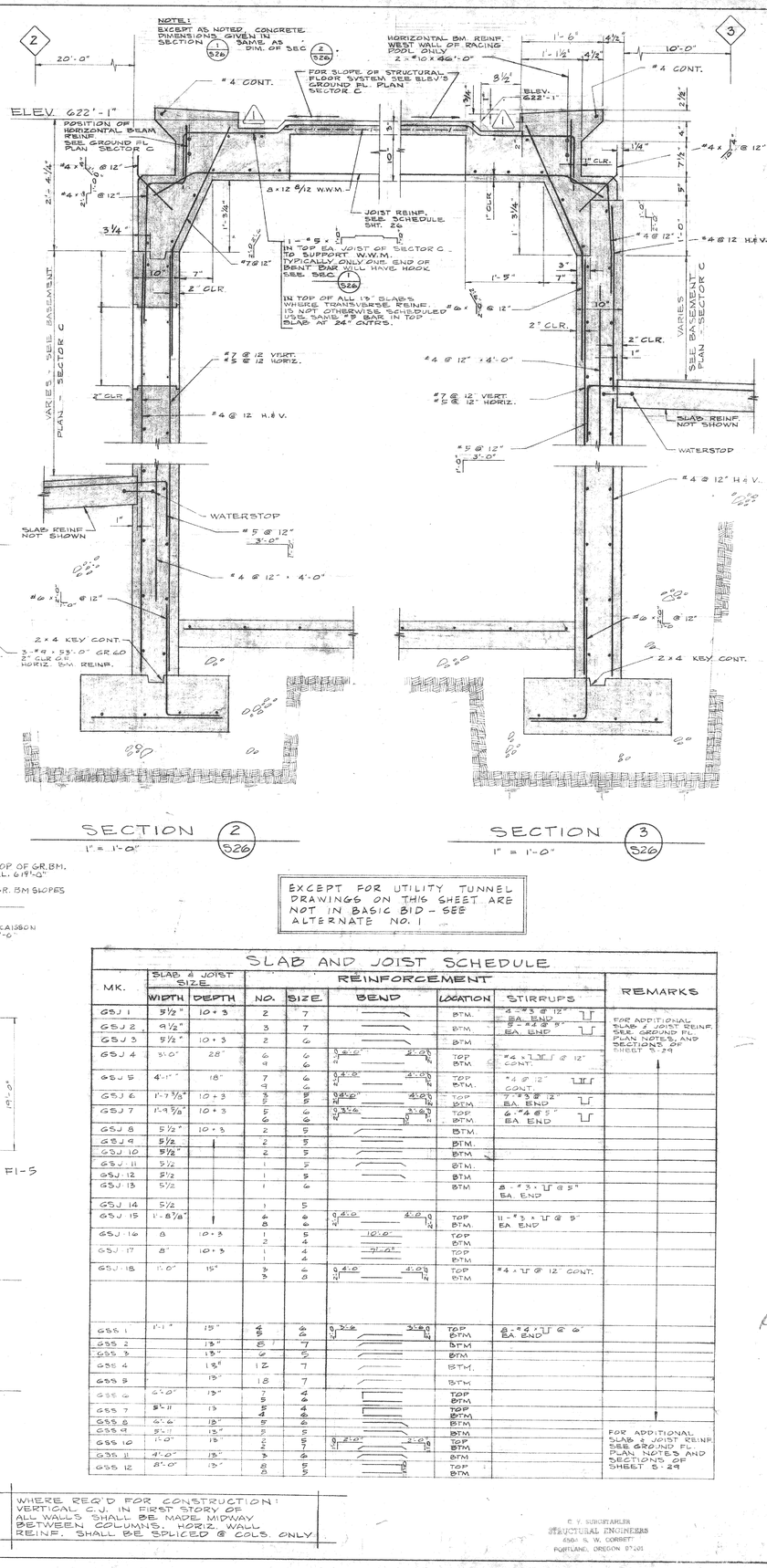
PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

ROOF PLAN / SECTOR B

SHEET NO.
S-15



GROUND FLOOR PLAN SECTOR C



SECTION 2/S26
1" = 1'-0"

SECTION 3/S26
1" = 1'-0"

EXCEPT FOR UTILITY TUNNEL DRAWINGS ON THIS SHEET ARE NOT IN BASIC BID - SEE ALTERNATE NO. 1

SLAB AND JOIST SCHEDULE

MK.	SLAB & JOIST SIZE.		REINFORCEMENT					REMARKS
	WIDTH	DEPTH	NO.	SIZE.	BEND	LOCATION	STIRRUPS	
GSJ 1	5 1/2"	10 + 3	2	7		BTM.	4 - #3 @ 12" EA. END	FOR ADDITIONAL SLAB & JOIST REINF. SEE GROUND FL. PLAN NOTES, AND SECTIONS OF SHEET S-29
GSJ 2	9 1/2"		3	7		BTM.	5 - #4 @ 8" EA. END	
GSJ 3	5 1/2"	10 + 3	2	6		BTM.		
GSJ 4	3'-0"	28"	6	6	0'-6" 2" CLR. 2'-0" 1/2"	TOP	#4 x 18" @ 12" CONT.	
			4	6		BTM		
GSJ 5	4'-1"	18"	7	6	0'-6" 2" CLR. 4'-0" 1/2"	TOP	#4 @ 12" CONT.	
			9	6		BTM.		
GSJ 6	1'-3 7/8"	10 + 3	3	5	0'-6" 2" CLR. 4'-0" 1/2"	TOP	7 - #3 @ 2" EA. END	
			5	5		BTM		
GSJ 7	1'-9 5/8"	10 + 3	5	6	0'-6" 2" CLR. 3'-6" 1/2"	TOP	6 - #4 @ 5" EA. END	
			6	6		BTM.		
GSJ 8	5 1/2"	10 + 3	2	5		BTM.		
GSJ 9	5 1/2"		2	5		BTM.		
GSJ 10	5 1/2"		2	5		BTM		
GSJ 11	5 1/2		1	5		BTM.		
GSJ 12	5 1/2		1	5		BTM		
GSJ 13	5 1/2		1	6		BTM	8 - #3 x 1'-6" @ 5" EA. END	
GSJ 14	5 1/2		1	5				
GSJ 15	1'-8 1/8"		6	6	0'-6" 2" CLR. 2'-0" 1/2"	TOP	11 - #3 x 1'-6" @ 5" EA. END	
			8	6		BTM.		
GSJ 16	8	10 + 3	1	5	10'-0"	TOP		
			2	4		BTM		
GSJ 17	8"	10 + 3	1	4	9'-6"	TOP		
			1	4		BTM		
GSJ 18	1'-0"	15"	3	6	0'-6" 2" CLR. 4'-0" 1/2"	TOP	#4 x 1'-6" @ 12" CONT.	
			3	8		BTM		
GSS 1	1'-1"	15"	4	6	0'-3" 2" CLR. 3'-6" 1/2"	TOP	8 - #4 x 1'-6" @ 6" EA. END	
			5	7		BTM		
GSS 2		13"	8	7		BTM		
GSS 3		13"	6	5		BTM		
GSS 4		13"	12	7		BTM.		
GSS 5		15"	18	7		BTM.		
GSS 6	5'-0"	13"	5	6		TOP		
			4	6		BTM		
GSS 7	5'-11	13	4	6		TOP		
			4	6		BTM		
GSS 8	6'-6	18"	5	6		BTM		
GSS 9	5'-11	13"	8	5		BTM.		
GSS 10	11'-0"	15"	2	5	0'-6" 2" CLR. 2'-0" 1/2"	TOP		
			2	7		BTM		
GSS 11	4'-0"	13"	3	6		BTM		
GSS 12	8'-0"	13"	3	5		TOP		
			8	5		BTM		

WHERE REQ'D FOR CONSTRUCTION: VERTICAL C.J. IN FIRST STORY OF ALL WALLS SHALL BE MADE MIDWAY BETWEEN COLUMNS. HORIZ. WALL REINF. SHALL BE SPLICED @ COLS. ONLY

BASEMENT FLOOR PLAN SECTOR C

PHASE III - HEALTH SCIENCES BUILDING

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

FOUNDATION-BASEMENT-GRND.FLR. PLAN/SEC. "C"

JOB NO. 69-13D

DATE JULY 1, 1970

REVISIONS
1 GENERAL REVISIONS 12-15-70

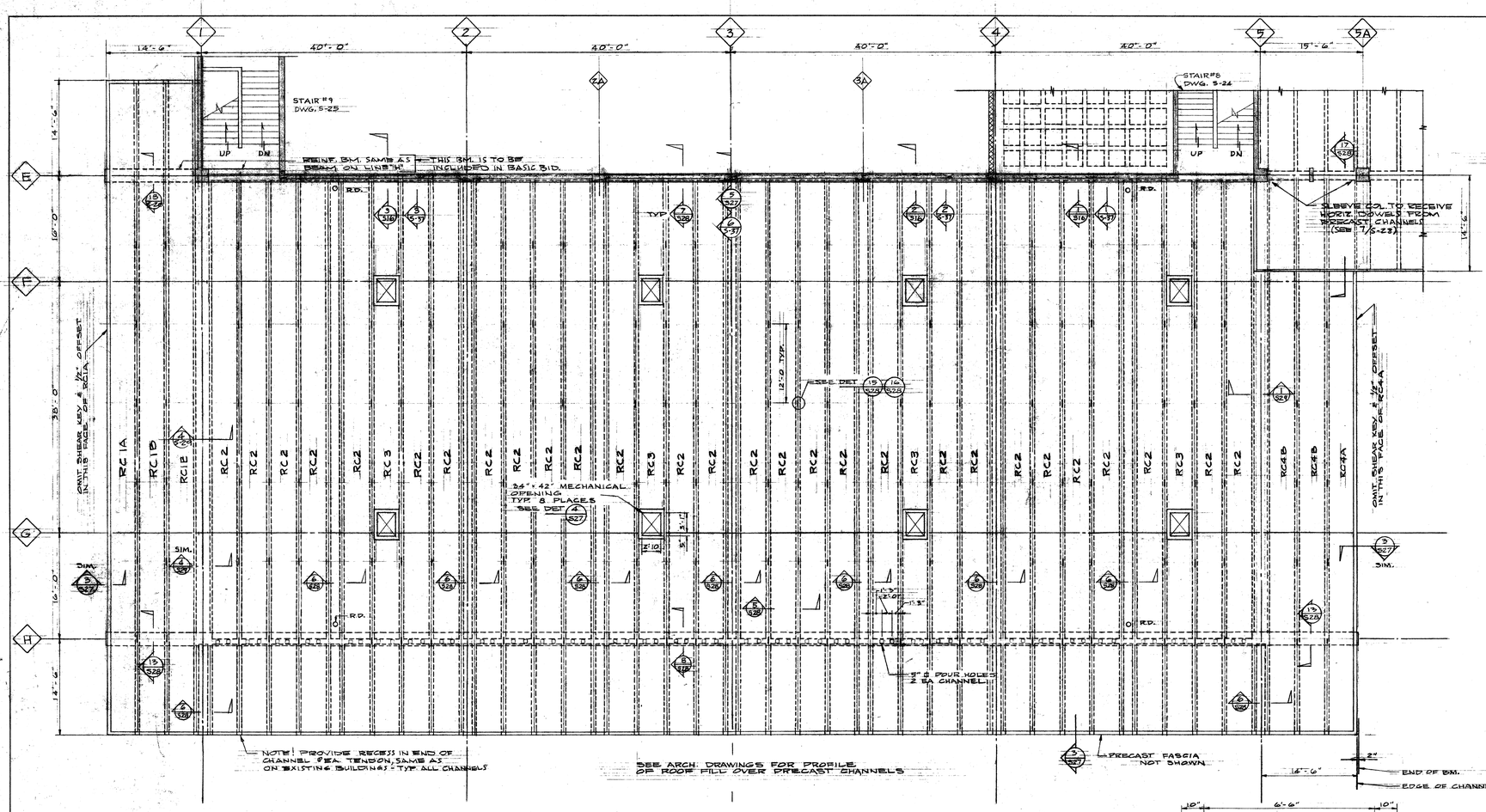
BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N.E. GLISAN STREET PORTLAND, OREGON

REGISTERED ARCHITECT ROBERT L. BLOODWORTH STATE OF OREGON

REGISTERED PROFESSIONAL ENGINEER 4326 SAMUEL M. HOLMES

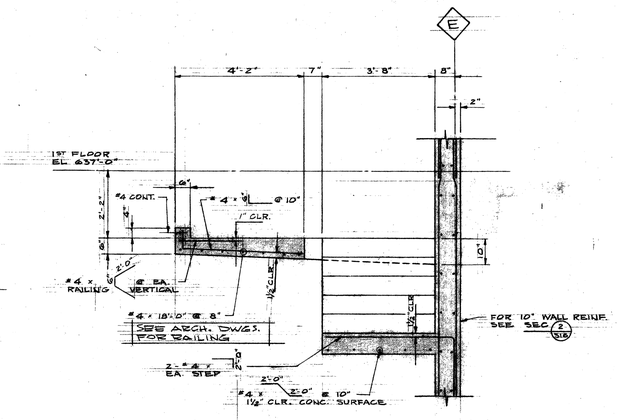
C. V. SUBSTARLER
STRUCTURAL ENGINEERS
6564 S.W. CORBETT
PORTLAND, OREGON 97201

SHEET NO.
S-26



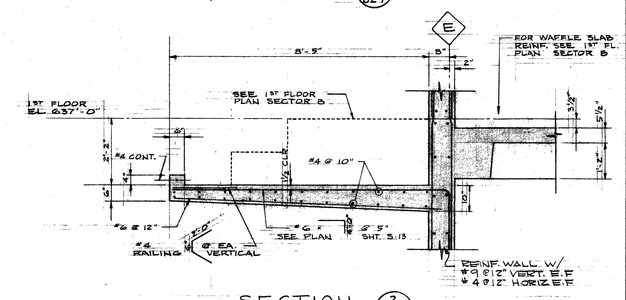
ROOF PLAN SECTOR C NOT IN BASIC BID SEE ALT. NO. 1

1/8" = 1'-0"



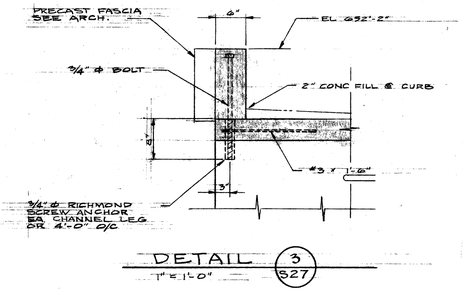
SECTION 1/S27

1/2" = 1'-0"



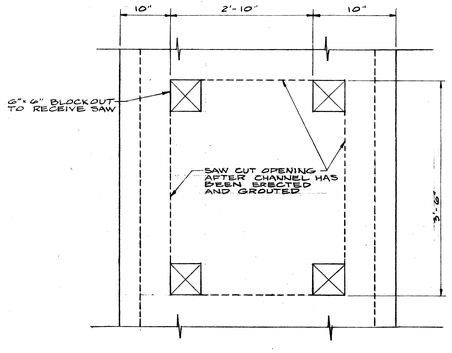
SECTION 2/S27

1/2" = 1'-0"



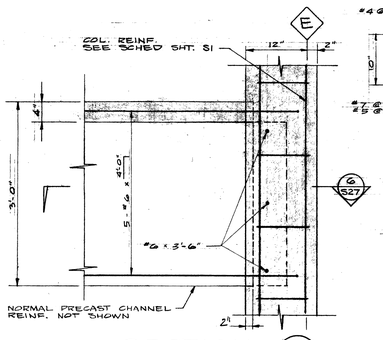
DETAIL 3/S27

1" = 1'-0"



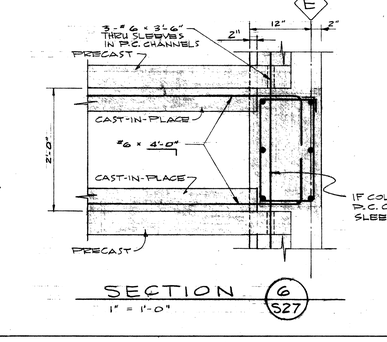
DETAIL 4/S27

1" = 1'-0"



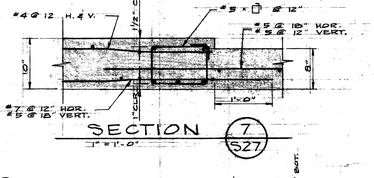
SECTION 5/S27

1" = 1'-0"



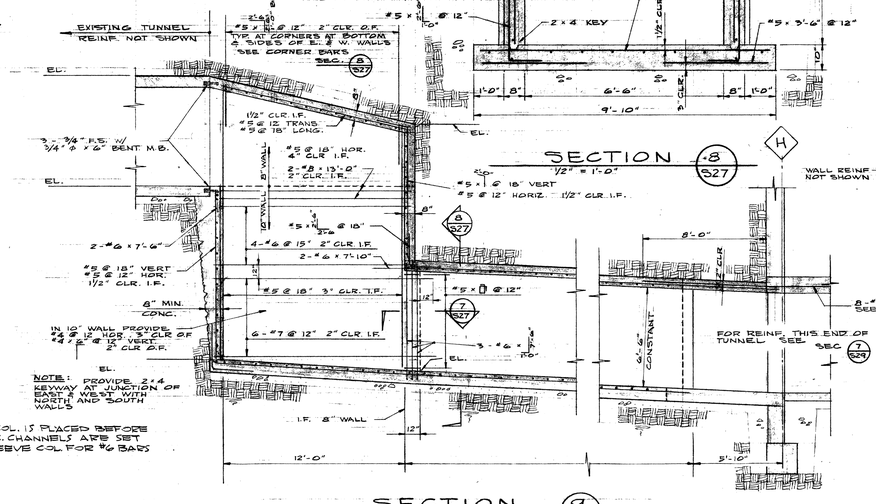
SECTION 6/S27

1" = 1'-0"



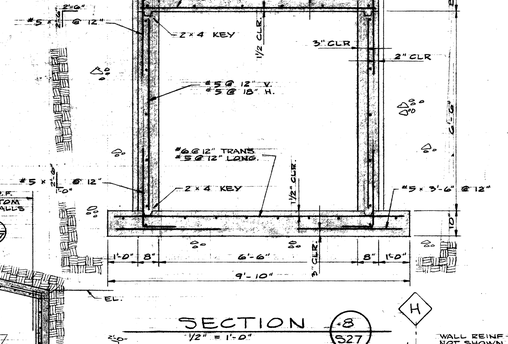
SECTION 7/S27

1" = 1'-0"



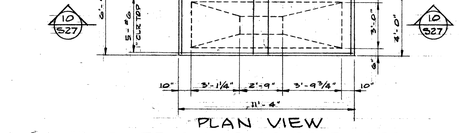
SECTION 9/S27

1/4" = 1'-0"



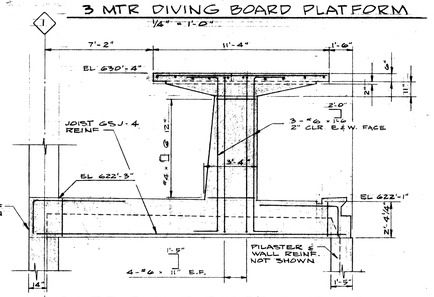
SECTION 8/S27

1/2" = 1'-0"



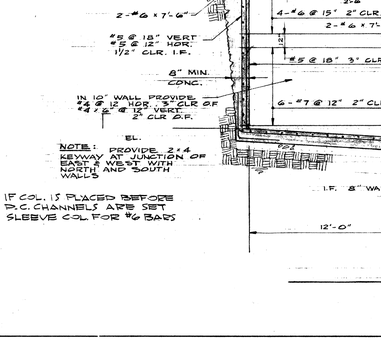
PLAN VIEW 3 MTR DIVING BOARD PLATFORM

1/4" = 1'-0"



3 MTR DIVING BOARD PLATFORM SECTION 10/S27

1/4" = 1'-0"



SECTIONS & DETAILS 1/S-27, 2/S-27, 3/S-27, 4/S-27, 5/S-27, 6/S-27 & 10/S-27 ARE NOT IN BASIC BID - SEE ALTERNATE NO. 1

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PHASE III - HEALTH SCIENCES BUILDING

ROOF PLAN & DETAILS / SECTOR "C"

DATE JULY 1, 1970

JOB NO. 69-13D

REVISIONS

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. ALISAN STREET PORTLAND, OREGON

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

REGISTERED ARCHITECT
OREGON

REGISTERED PROFESSIONAL ENGINEER
4326
OREGON

SHEET NO.
S-27

SECTION 3

STRUCTURAL AND NONSTRUCTURAL CHECKLISTS

ASCE 41-13 Tier 1 Checklists

FIRM:	ABHT Structural Engineers
PROJECT NAME:	PCC Sylvania - HT
SEISMICITY LEVEL:	High
PROJECT NUMBER:	18518
COMPLETED BY:	CA
DATE COMPLETED:	
REVIEWED BY:	
REVIEW DATE:	

Legend: C = Compliant, NC = Noncompliant, N/A = Not Applicable, U = Unknown

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16.1 Basic Checklist

Very Low Seismicity

Structural Components

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☒	☐	☐	☐	LOAD PATH: The structure shall contain a complete, well-defined load path, including structural elements and connections, that serves to transfer the inertial forces associated with the mass of all elements of the building to the foundation. (Commentary: Sec. A.2.1.1. Tier 2: Sec. 5.4.1.1)	
C	NC	N/A	U		
☒	☐	☐	☐	WALL ANCHORAGE: Exterior concrete or masonry walls that are dependent on the diaphragm for lateral support are anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections shall have adequate strength to resist the connection force calculated in the Quick Check procedure of Section 4.5.3.7. (Commentary: Sec. A.5.1.1. Tier 2: Sec. 5.7.1.1)	

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16.1.2LS Life Safety Basic Configuration Checklist

Low Seismicity

Building System

General

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☒	☐	☐	☐	LOAD PATH: The structure shall contain a complete, well-defined load path, including structural elements and connections, that serves to transfer the inertial forces associated with the mass of all elements of the building to the foundation. (Commentary: Sec. A.2.1.1. Tier 2: Sec. 5.4.1.1)	
C	NC	N/A	U		
☒	☐	☐	☐	ADJACENT BUILDINGS: The clear distance between the building being evaluated and any adjacent building is greater than 4% of the height of the shorter building. This statement need not apply for the following building types: W1, W1A, and W2. (Commentary: Sec. A.2.1.2. Tier 2: Sec. 5.4.1.2)	
C	NC	N/A	U		
☐	☐	☒	☐	MEZZANINES: Interior mezzanine levels are braced independently from the main structure or are anchored to the seismic-force-resisting elements of the main structure. (Commentary: Sec. A.2.1.3. Tier 2: Sec. 5.4.1.3)	

Legend: C = Compliant, NC = Noncompliant, N/A = Not Applicable, U = Unknown

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Building Configuration

RATING				DESCRIPTION	COMMENTS
C ☒	NC ☐	N/A ☐	U ☐	WEAK STORY: The sum of the shear strengths of the seismic-force-resisting system in any story in each direction is not less than 80% of the strength in the adjacent story above. (Commentary: Sec. A2.2.2. Tier 2: Sec. 5.4.2.1)	
C ☒	NC ☐	N/A ☐	U ☐	SOFT STORY: The stiffness of the seismic-force-resisting system in any story is not less than 70% of the seismic-force-resisting system stiffness in an adjacent story above or less than 80% of the average seismic-force-resisting system stiffness of the three stories above. (Commentary: Sec. A.2.2.3. Tier 2: Sec. 5.4.2.2)	
C ☐	NC ☒	N/A ☐	U ☐	VERTICAL IRREGULARITIES: All vertical elements in the seismic-force-resisting system are continuous to the foundation. (Commentary: Sec. A.2.2.4. Tier 2: Sec. 5.4.2.3)	Several shear wall lines are not continuous to foundation.
C ☐	NC ☒	N/A ☐	U ☐	GEOMETRY: There are no changes in the net horizontal dimension of the seismic-force-resisting system of more than 30% in a story relative to adjacent stories, excluding one-story penthouses and mezzanines. (Commentary: Sec. A.2.2.5. Tier 2: Sec. 5.4.2.4)	A net change more than 30% was noted in Sector A

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C	NC	N/A	U		
☐	☒	☐	☐	MASS: There is no change in effective mass more than 50% from one story to the next. Light roofs, penthouses, and mezzanines need not be considered. (Commentary: Sec. A.2.2.6. Tier 2: Sec. 5.4.2.5)	There is a large change in mass between Ground and First floors.
☐	☒	☐	☐	TORSION: The estimated distance between the story center of mass and the story center of rigidity is less than 20% of the building width in either plan dimension. (Commentary: Sec. A.2.2.7. Tier 2: Sec. 5.4.2.6)	

Moderate Seismicity

Geologic Site Hazards

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☐	☐	☒	LIQUEFACTION: Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance shall not exist in the foundation soils at depths within 50 ft under the building. (Commentary: Sec. A.6.1.1. Tier 2: 5.4.3.1)	
☐	☒	☐	☐	SLOPE FAILURE: The building site is sufficiently remote from potential earthquake-induced slope failures or rockfalls to be unaffected by such failures or is capable of accommodating any predicted movements without failure. (Commentary: Sec. A.6.1.2. Tier 2: 5.4.3.1)	According to Portlandmaps.com, this building is located in a Steep Slope Area and Landslide Hazard Area.

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C	NC	N/A	U		
☐	☐	☐	☒	SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site are not anticipated. (Commentary: Sec. A.6.1.3. Tier 2: 5.4.3.1)	

High Seismicity

Foundation Configuration

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☒	☐	☐	☐	OVERTURNING: The ratio of the least horizontal dimension of the seismic-force-resisting system at the foundation level to the building height (base/height) is greater than $0.6S_a$. (Commentary: Sec. A.6.2.1. Tier 2: Sec. 5.4.3.3)	
C	NC	N/A	U		
☒	☐	☐	☐	TIES BETWEEN FOUNDATION ELEMENTS: The foundation has ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Site Class A, B, or C. (Commentary: Sec. A.6.2.2. Tier 2: Sec. 5.4.3.4)	

Legend: C = Compliant, NC = Noncompliant, N/A = Not Applicable, U = Unknown

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ASCE 41-13 Tier 1 Checklists

FIRM:	ABHT Structural Engineers
PROJECT NAME:	PCC Sylvania - HT
SEISMICITY LEVEL:	High
PROJECT NUMBER:	18518
COMPLETED BY:	CA
DATE COMPLETED:	
REVIEWED BY:	
REVIEW DATE:	

Legend: C = Compliant, NC = Noncompliant, N/A = Not Applicable, U = Unknown

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16.10LS Life Safety Structural Checklist for Building Types C2: Concrete Shear Walls with Stiff Diaphragms and C2A: Concrete Shear Walls with Flexible Diaphragms

Low and Moderate Seismicity

Seismic-Force-Resisting System

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☒	☐	☐	COMPLETE FRAMES: Steel or concrete frames classified as secondary components form a complete vertical-load-carrying system. (Commentary: Sec. A.3.1.6.1. Tier 2: Sec. 5.5.2.5.1)	
C	NC	N/A	U		
☒	☐	☐	☐	REDUNDANCY: The number of lines of shear walls in each principal direction is greater than or equal to 2. (Commentary: Sec. A.3.2.1.1. Tier 2: Sec. 5.5.1.1)	
C	NC	N/A	U		
☐	☒	☐	☐	SHEAR STRESS CHECK: The shear stress in the concrete shear walls, calculated using the Quick Check procedure of Section 4.5.3.3, is less than the greater of 100 lb/in.^{2} or $2\sqrt{f'_c}$. (Commentary: Sec. A.3.2.2.1. Tier 2: Sec. 5.5.3.1.1)	See attached calculations.
C	NC	N/A	U		
☒	☐	☐	☐	REINFORCING STEEL: The ratio of reinforcing steel area to gross concrete area is not less than 0.0012 in the vertical direction and 0.0020 in the horizontal direction. (Commentary: Sec. A.3.2.2.2. Tier 2: Sec. 5.5.3.1.3)	8" Concrete Wall: vert: .0012x8"x12" = 0.115 in^2/ft horiz.: .0020x8"x12" = 0.019 in^2/ft 10" Concrete Wall: vert: .0012x10"x12" = 0.144 in^2/ft horiz.: .0020x10"x12" = 0.240 in^2/ft

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Connections

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☒	☐	☐	☐	WALL ANCHORAGE AT FLEXIBLE DIAPHRAGMS: Exterior concrete or masonry walls that are dependent on flexible diaphragms for lateral support are anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections have adequate strength to resist the connection force calculated in the Quick Check procedure of Section 4.5.3.7. (Commentary: Sec. A.5.1.1. Tier 2: Sec. 5.7.1.1)	See attached calculations.
C	NC	N/A	U		
☒	☐	☐	☐	TRANSFER TO SHEAR WALLS: Diaphragms are connected for transfer of seismic forces to the shear walls. (Commentary: Sec. A.5.2.1. Tier 2: Sec. 5.7.2)	
C	NC	N/A	U		
☐	☒	☐	☐	FOUNDATION DOWELS: Wall reinforcement is doweled into the foundation with vertical bars equal in size and spacing to the vertical wall reinforcing immediately above the foundation. (Commentary: Sec. A.5.3.5. Tier 2: Sec. 5.7.3.4)	Typical dowels are #6 @ 12" o.c. Vertical reinforcing in walls 10" or more in thickness have (2) curtains of rebar. Dowels do not match size and spacing.

High Seismicity

Seismic-Force-Resisting System

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☒	☐	☐	DEFLECTION COMPATIBILITY: Secondary components have the shear capacity to develop the flexural strength of the components. (Commentary: Sec. A.3.1.6.2. Tier 2: Sec. 5.5.2.5.2)	

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C	NC	N/A	U		
☐	☐	☒	☐	FLAT SLABS: Flat slabs or plates not part of the seismic-force-resisting system have continuous bottom steel through the column joints. (Commentary: Sec. A.3.1.6.3. Tier 2: Sec. 5.5.2.5.3)	System dose not utilize flat slab/flat plate construction.
☐	☒	☐	☐	COUPLING BEAMS: The stirrups in coupling beams over means of egress are spaced at or less than *d*/2 and are anchored into the confined core of the beam with hooks of 135 degrees or more. The ends of both walls to which the coupling beam is attached are supported at each end to resist vertical loads caused by overturning. (Commentary: Sec. A.3.2.2.3. Tier 2: Sec. 5.5.3.2.1)	- Wall openings at door in stairs did not shown "coupling beam" details. - In general seismic hooks (i.e. 135 degree bends on stirrups) was not utilized.

Connections

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☒	☐	☐	UPLIFT AT PILE CAPS: Pile caps have top reinforcement, and piles are anchored to the pile caps. (Commentary: Sec. A.5.3.8. Tier 2: Sec. 5.7.3.5)	- No top reinforcing in pile caps. - Pile concrete encasement is doweled to pile caps. WF pile does not appear anchored to concrete encasement w/ rebar dowels or additional studs.

Diaphragms (Flexible or Stiff)

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☒	☐	☐	☐	DIAPHRAGM CONTINUITY: The diaphragms are not composed of split-level floors and do not have expansion joints. (Commentary: Sec. A.4.1.1. Tier 2: Sec. 5.6.1.1)	

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C	NC	N/A	U		
☐	☒	☐	☐	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls are less than 25% of the wall length. (Commentary: Sec. A.4.1.4. Tier 2: Sec. 5.6.1.3)	

Flexible Diaphragms

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☒	☐	☐	☐	CROSS TIES: There are continuous cross ties between diaphragm chords. (Commentary: Sec. A.4.1.2. Tier 2: Sec. 5.6.1.2)	
C	NC	N/A	U		
☐	☐	☒	☐	STRAIGHT SHEATHING: All straight sheathed diaphragms have aspect ratios less than 2-to-1 in the direction being considered. (Commentary: Sec. A.4.2.1. Tier 2: Sec. 5.6.2)	
C	NC	N/A	U		
☐	☐	☒	☐	SPANS: All wood diaphragms with spans greater than 24 ft consist of wood structural panels or diagonal sheathing. (Commentary: Sec. A.4.2.2. Tier 2: Sec. 5.6.2)	

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C	NC	N/A	U		
☐	☐	☒	☐	DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms have horizontal spans less than 40 ft and aspect ratios less than or equal to 4-to-1. (Commentary: Sec. A.4.2.3. Tier 2: Sec. 5.6.2)	
C	NC	N/A	U		
☒	☐	☐	☐	OTHER DIAPHRAGMS: The diaphragm does not consist of a system other than wood, metal deck, concrete, or horizontal bracing. (Commentary: Sec. A.4.7.1. Tier 2: Sec. 5.6.5)	

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ASCE 41-13 Tier 1 Checklists

FIRM:	ABHT Structural Engineers
PROJECT NAME:	PCC Sylvania - HT
SEISMICITY LEVEL:	High
PROJECT NUMBER:	18518
COMPLETED BY:	CA
DATE COMPLETED:	
REVIEWED BY:	
REVIEW DATE:	

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16.17 Nonstructural Checklist

The Performance Level is designated LS for Life Safety or PR for Position Retention. The level of seismicity is designated as "not required" or by L, M, or H, for Low, Moderate, and High.

All Seismicity Levels

Life Safety Systems

RATING				DESCRIPTION	COMMENTS
C ☐	NC ☒	N/A ☐	U ☐	LS-LMH; PR-LMH. FIRE SUPPRESSION PIPING: Fire suppression piping is anchored and braced in accordance with NFPA-13. (Commentary: Sec. A.7.13.1. Tier 2: Sec. 13.7.4)	
C ☐	NC ☒	N/A ☐	U ☐	LS-LMH; PR-LMH. FLEXIBLE COUPLINGS: Fire suppression piping has flexible couplings in accordance with NFPA-13. (Commentary: Sec. A.7.13.2. Tier 2: Sec. 13.7.4)	
C ☐	NC ☐	N/A ☒	U ☐	LS-LMH; PR-LMH. EMERGENCY POWER: Equipment used to power or control life safety systems is anchored or braced. (Commentary: Sec. A.7.12.1. Tier 2: Sec. 13.7.7)	
C ☐	NC ☐	N/A ☒	U ☐	LS-LMH; PR-LMH. STAIR AND SMOKE DUCTS: Stair pressurization and smoke control ducts are braced and have flexible connections at seismic joints. (Commentary: Sec. A.7.14.1. Tier 2: Sec. 13.7.6)	

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C	NC	N/A	U		
☐	☒	☐	☐	LS-MH; PR-MH. SPRINKLER CEILING CLEARANCE: Penetrations through panelized ceilings for fire suppression devices provide clearances in accordance with NFPA-13. (Commentary: Sec. A.7.13.3. Tier 2: Sec. 13.7.4)	
☒	☐	☐	☐	LS-not required; PR-LMH. EMERGENCY LIGHTING: Emergency and egress lighting equipment is anchored or braced. (Commentary: Sec. A.7.3.1. Tier 2: Sec. 13.7.9)	

Hazardous Materials

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☐	☐	☒	LS-LMH; PR-LMH. HAZARDOUS MATERIAL EQUIPMENT: Equipment mounted on vibration isolators and containing hazardous material is equipped with restraints or snubbers. (Commentary: Sec. A.7.12.2. Tier 2: 13.7.1)	
☐	☐	☐	☒	LS-LMH; PR-LMH. HAZARDOUS MATERIAL STORAGE: Breakable containers that hold hazardous material, including gas cylinders, are restrained by latched doors, shelf lips, wires, or other methods. (Commentary: Sec. A.7.15.1. Tier 2: Sec. 13.8.4)	

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C	NC	N/A	U		
☐	☐	☐	☒	LS-MH; PR-MH. HAZARDOUS MATERIAL DISTRIBUTION: Piping or ductwork conveying hazardous materials is braced or otherwise protected from damage that would allow hazardous material release. (Commentary: Sec. A.7.13.4. Tier 2: Sec. 13.7.3 and 13.7.5)	Verify
☐	☐	☐	☒	LS-MH; PR-MH. SHUT-OFF VALVES: Piping containing hazardous material, including natural gas, has shut-off valves or other devices to limit spills or leaks. (Commentary: Sec. A.7.13.3. Tier 2: Sec. 13.7.3 and 13.7.5)	
☐	☐	☐	☒	LS-LMH; PR-LMH. FLEXIBLE COUPLINGS: Hazardous material ductwork and piping, including natural gas piping, has flexible couplings. (Commentary: Sec. A.7.15.4, Tier 2: Sec.13.7.3 and 13.7.5)	
☐	☐	☒	☐	LS-MH; PR-MH. PIPING OR DUCTS CROSSING SEISMIC JOINTS: Piping or ductwork carrying hazardous material that either crosses seismic joints or isolation planes or is connected to independent structures has couplings or other details to accommodate the relative seismic displacements. (Commentary: Sec. A.7.13.6. Tier 2: Sec.13.7.3, 13.7.5, and 13.7.6)	

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Partitions

RATING				DESCRIPTION	COMMENTS
C ☐	NC ☐	N/A ☐	U ☒	LS-LMH; PR-LMH. UNREINFORCED MASONRY: Unreinforced masonry or hollow-clay tile partitions are braced at a spacing of at most 10 ft in Low or Moderate Seismicity, or at most 6 ft in High Seismicity. (Commentary: Sec. A.7.1.1. Tier 2: Sec. 13.6.2)	Reinforcing details of existing CMU partition walls are unknown.
C ☒	NC ☐	N/A ☐	U ☐	LS-LMH; PR-LMH. HEAVY PARTITIONS SUPPORTED BY CEILINGS: The tops of masonry or hollow-clay tile partitions are not laterally supported by an integrated ceiling system. (Commentary: Sec. A.7.2.1. Tier 2: Sec. 13.6.2)	
C ☐	NC ☒	N/A ☐	U ☐	LS-MH; PR-MH. DRIFT: Rigid cementitious partitions are detailed to accommodate the following drift ratios: in steel moment frame, concrete moment frame, and wood frame buildings, 0.02; in other buildings, 0.005. (Commentary A.7.1.2 Tier 2: Sec. 13.6.2)	
C ☐	NC ☐	N/A ☐	U ☒	LS-not required; PR-MH. LIGHT PARTITIONS SUPPORTED BY CEILINGS: The tops of gypsum board partitions are not laterally supported by an integrated ceiling system. (Commentary: Sec. A.7.2.1. Tier 2: Sec. 13.6.2)	

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C	NC	N/A	U		
☐	☐	☒	☐	LS-not required; PR-MH. STRUCTURAL SEPARATIONS: Partitions that cross structural separations have seismic or control joints. (Commentary: Sec. A.7.1.3. Tier 2. Sec. 13.6.2)	
☐	☐	☐	☒	LS-not required; PR-MH. TOPS: The tops of ceiling-high framed or panelized partitions have lateral bracing to the structure at a spacing equal to or less than 6 ft. (Commentary: Sec. A.7.1.4. Tier 2. Sec. 13.6.2)	

Ceilings

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☐	☐	☒	LS-MH; PR-LMH. SUSPENDED LATH AND PLASTER: Suspended lath and plaster ceilings have attachments that resist seismic forces for every 12 ft^2 of area. (Commentary: Sec. A.7.2.3. Tier 2: Sec. 13.6.4)	
☐	☐	☐	☒	LS-MH; PR-LMH. SUSPENDED GYPSUM BOARD: Suspended gypsum board ceilings have attachments that resist seismic forces for every 12 ft^2 of area. (Commentary: Sec. A.7.2.3. Tier 2: Sec. 13.6.4)	

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C	NC	N/A	U		
☐	☒	☐	☐	LS-not required; PR-MH. INTEGRATED CEILINGS: Integrated suspended ceilings with continuous areas greater than 144 ft^2, and ceilings of smaller areas that are not surrounded by restraining partitions, are laterally restrained at a spacing no greater than 12 ft with members attached to the structure above. Each restraint location has a minimum of four diagonal wires and compression struts, or diagonal members capable of resisting compression. (Commentary: Sec. A.7.2.2. Tier 2: Sec. 13.6.4)	
C	NC	N/A	U		
☐	☒	☐	☐	LS-not required; PR-MH. EDGE CLEARANCE: The free edges of integrated suspended ceilings with continuous areas greater than 144 ft^2 have clearances from the enclosing wall or partition of at least the following: in Moderate Seismicity, 1/2 in.; in High Seismicity, 3/4 in. (Commentary: Sec. A.7.2.4. Tier 2: Sec. 13.6.4)	
C	NC	N/A	U		
☐	☐	☒	☐	LS-not required; PR-MH. CONTINUITY ACROSS STRUCTURE JOINTS: The ceiling system does not cross any seismic joint and is not attached to multiple independent structures. (Commentary: Sec. A.7.2.5. Tier 2: Sec. 13.6.4)	
C	NC	N/A	U		
☐	☒	☐	☐	LS-not required; PR-H. EDGE SUPPORT: The free edges of integrated suspended ceilings with continuous areas greater than 144 ft^2 are supported by closure angles or channels not less than 2 in. wide. (Commentary: Sec. A.7.2.6. Tier 2: Sec. 13.6.4)	

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C	NC	N/A	U		
☐	☒	☐	☐	LS-not required; PR-H. SEISMIC JOINTS: Acoustical tile or lay-in panel ceilings have seismic separation joints such that each continuous portion of the ceiling is no more than 2500 ft^2 and has a ratio of long-to-short dimension no more than 4-to-1. (Commentary: Sec. A.7.2.7. Tier 2: 13.6.4)	

Light Fixtures

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☐	☐	☒	LS-MH; PR-MH. INDEPENDENT SUPPORT: Light fixtures that weigh more per square foot than the ceiling they penetrate are supported independent of the grid ceiling suspension system by a minimum of two wires at diagonally opposite corners of each fixture. (Commentary: Sec. A.7.3.2. Tier 2: Sec. 13.6.4 and 13.7.9)	
C	NC	N/A	U		
☐	☒	☐	☐	LS-not required; PR-H. PENDANT SUPPORTS: Light fixtures on pendant supports are attached at a spacing equal to or less than 6 ft and, if rigidly supported, are free to move with the structure to which they are attached without damaging adjoining components. (Commentary: A.7.3.3. Tier 2: Sec. 13.7.9)	
C	NC	N/A	U		
☐	☐	☐	☒	LS-not required; PR-H. LENS COVERS: Lens covers on light fixtures are attached with safety devices. (Commentary: Sec. A.7.3.4. Tier 2: Sec. 13.7.9)	

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Cladding and Glazing

RATING				DESCRIPTION	COMMENTS
C ☐	NC ☐	N/A ☒	U ☐	LS-MH; PR-MH. CLADDING ANCHORS: Cladding components weighing more than 10 lb/ft^2 are mechanically anchored to the structure at a spacing equal to or less than the following: for Life Safety in Moderate Seismicity, 6 ft; for Life Safety in High Seismicity and for Position Retention in any seismicity, 4 ft. (Commentary: Sec. A.7.4.1. Tier 2: Sec. 13.6.1)	
C ☐	NC ☐	N/A ☒	U ☐	LS-MH; PR-MH. CLADDING ISOLATION: For steel or concrete moment frame buildings, panel connections are detailed to accommodate a story drift ratio of at least the following: for Life Safety in Moderate Seismicity, 0.01; for Life Safety in High Seismicity and for Position Retention in any seismicity, 0.02. (Commentary: Sec. A.7.4.3. Tier 2: Section 13.6.1)	
C ☐	NC ☐	N/A ☒	U ☐	LS-MH; PR-MH. MULTI-STORY PANELS: For multi-story panels attached at more than one floor level, panel connections are detailed to accommodate a story drift ratio of at least the following: for Life Safety in Moderate Seismicity, 0.01; for Life Safety in High Seismicity and for Position Retention in any seismicty, 0.02. (Commentary: Sec. A.7.4.4. Tier 2: Sec. 13.6.1)	
C ☐	NC ☐	N/A ☒	U ☐	LS-MH; PR-MH. PANEL CONNECTIONS: Cladding panels are anchored out-of-plane with a minimum number of connections for each wall panel, as follows: for Life Safety in Moderate Seismicity, 2 connections; for Life Safety in High Seismicity and for Position Retention in any seismicity, 4 connections. (Commentary: Sec. A.7.4.5. Tier 2: Sec. 13.6.1.4)	

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C	NC	N/A	U		
☐	☐	☒	☐	LS-MH; PR-MH. BEARING CONNECTIONS: Where bearing connections are used, there is a minimum of two bearing connections for each cladding panel. (Commentary: Sec. A.7.4.6. Tier 2: Sec. 13.6.1.4)	
☐	☐	☒	☐	LS-MH; PR-MH. INSERTS: Where concrete cladding components use inserts, the inserts have positive anchorage or are anchored to reinforcing steel. (Commentary: Sec. A.7.4.7. Tier 2: Sec. 13.6.1.4)	
☐	☐	☐	☒	LS-MH; PR-MH. OVERHEAD GLAZING: Glazing panes of any size in curtain walls and individual interior or exterior panes over 16 ft^2 in area are laminated annealed or laminated heat-strengthened glass and are detailed to remain in the frame when cracked. (Commentary: Sec. A.7.4.8: Tier 2: Sec. 13.6.1.5)	

Masonry Veneer

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☐	☐	☒	LS-LMH; PR-LMH. TIES: Masonry veneer is connected to the backup with corrosion-resistant ties. There is a minimum of one tie for every 2-2/3 ft^2, and the ties have spacing no greater than the following: for Life Safety in Low or Moderate Seismicity, 36 in.; for Life Safety in High Seismicity and for Position Retention in any seismicity, 24 in. (Commentary: Sec. A.7.5.1. Tier 2: Sec. 13.6.1.2)	

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C	NC	N/A	U		
☒	☐	☐	☐	LS-LMH; PR-LMH. SHELF ANGLES: Masonry veneer is supported by shelf angles or other elements at each floor above the ground floor. (Commentary: Sec. A.7.5.2. Tier 2: Sec. 13.6.1.2)	
☐	☐	☐	☒	LS-LMH; PR-LMH. WEAKENED PLANES: Masonry veneer is anchored to the backup adjacent to weakened planes, such as at the locations of flashing. (Commentary: Sec. A.7.5.3. Tier 2: Sec. 13.6.1.2)	
☒	☐	☐	☐	LS-LMH; PR-LMH. UNREINFORCED MASONRY BACKUP: There is no unreinforced masonry backup. (Commentary: Sec. A.7.7.2. Tier 2: Section 13.6.1.1 and 13.6.1.2)	
☐	☐	☒	☐	LS-MH; PR-MH. STUD TRACKS: For veneer with metal stud backup, stud tracks are fastened to the structure at a spacing equal to or less than 24 in. on center. (Commentary: Sec. A.7.6.1. Tier 2: Section 13.6.1.1 and 13.6.1.2)	

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C	NC	N/A	U		
☐	☐	☒	☐	LS-MH; PR-MH. ANCHORAGE: For veneer with concrete block or masonry backup, the backup is positively anchored to the structure at a horizontal spacing equal to or less than 4 ft along the floors and roof. (Commentary: Sec. A.7.7.1. Tier 2: Section 13.6.1.1 and 13.6.1.2)	
C	NC	N/A	U		
☐	☐	☒	☐	LS-not required; PR-MH. WEEP HOLES: In veneer anchored to stud walls, the veneer has functioning weep holes and base flashing. (Commentary: Sec. A.7.5.6. Tier 2: Section 13.6.1.2)	
C	NC	N/A	U		
☐	☐	☒	☐	LS-not required; PR-MH. OPENINGS: For veneer with metal stud backup, steel studs frame window and door openings. (Commentary: Sec. A.7.6.2. Tier 2: Sec. 13.6.1.1 and 13.6.1.2)	

Parapets, Cornices, Ornamentation, and Appendages

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☐	☒	☐	LS-LMH; PR-LMH. URM PARAPETS OR CORNICES: Laterally unsupported unreinforced masonry parapets or cornices have height-to-thickness ratios no greater than the following: for Life Safety in Low or Moderate Seismicity, 2.5; for Life Safety in High Seismicity and for Position Retention in any seismicity, 1.5. (Commentary: Sec. A.7.8.1. Tier 2: Sec. 13.6.5)	

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C	NC	N/A	U		
☐	☐	☒	☐	LS-LMH; PR-LMH. CANOPIES: Canopies at building exits are anchored to the structure at a spacing no greater than the following: for Life Safety in Low or Moderate Seismicity, 10 ft; for Life Safety in High Seismicity and for Position Retention in any seismicity, 6 ft. (Commentary: Sec. A.7.8.2. Tier 2: Sec. 13.6.6)	
C	NC	N/A	U		
☐	☐	☒	☐	LS-MH; PR-LMH. CONCRETE PARAPETS: Concrete parapets with height-to-thickness ratios greater than 2.5 have vertical reinforcement. (Commentary: Sec. A.7.8.3. Tier 2: Sec. 13.6.5)	
C	NC	N/A	U		
☐	☐	☒	☐	LS-MH; PR-LMH. APPENDAGES: Cornices, parapets, signs, and other ornamentation or appendages that extend above the highest point of anchorage to the structure or cantilever from components are reinforced and anchored to the structural system at a spacing equal to or less than 6 ft. This checklist item does not apply to parapets or cornices covered by other checklist items. (Commentary: Sec. A.7.8.4. Tier 2: Sec. 13.6.6)	

Masonry Chimneys

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☐	☒	☐	LS-LMH; PR-LMH. URM CHIMNEYS: Unreinforced masonry chimneys extend above the roof surface no more than the following: for Life Safety in Low or Moderate Seismicity, 3 times the least dimension of the chimney; for Life Safety in High Seismicity and for Position Retention in any seismicity, 2 times the least dimension of the chimney. (Commentary: Sec. A.7.9.1. Tier 2: 13.6.7)	

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C	NC	N/A	U		
☐	☐	☒	☐	LS-LMH; PR-LMH. ANCHORAGE: Masonry chimneys are anchored at each floor level, at the topmost ceiling level, and at the roof. (Commentary: Sec. A.7.9.2. Tier 2: 13.6.7)	

Stairs

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☐	☒	☐	LS-LMH; PR-LMH. STAIR ENCLOSURES: Hollow-clay tile or unreinforced masonry walls around stair enclosures are restrained out-of-plane and have height-to-thickness ratios not greater than the following: for Life Safety in Low or Moderate Seismicity, 15-to-1; for Life Safety in High Seismicity and for Position Retention in any seismicity, 12-to-1. (Commentary: Sec. A.7.10.1. Tier 2: Sec. 13.6.2 and 13.6.8)	
C	NC	N/A	U		
☐	☐	☒	☐	LS-LMH; PR-LMH. STAIR DETAILS: In moment frame structures, the connection between the stairs and the structure does not rely on shallow anchors in concrete. Alternatively, the stair details are capable of accommodating the drift calculated using the Quick Check procedure of Section 4.5.3.1 without including any lateral stiffness contribution from the stairs. (Commentary: Sec. A.7.10.2. Tier 2: 13.6.8)	

Contents and Furnishings

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☒	☐	☐	LS-MH; PR-MH. INDUSTRIAL STORAGE RACKS: Industrial storage racks or pallet racks more than 12 ft high meet the requirements of ANSI/MH 16.1 as modified by ASCE 7 Chapter 15. (Commentary: Sec. A.7.11.1. Tier 2: Sec. 13.8.1)	Current use of tall storage rack were observed in the basement of Sector A

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C	NC	N/A	U		
☐	☒	☐	☐	LS-H; PR-MH. TALL NARROW CONTENTS: Contents more than 6 ft high with a height-to-depth or height-to-width ratio greater than 3-to-1 are anchored to the structure or to each other. (Commentary: Sec. A.7.11.2. Tier 2: Sec. 13.8.2)	
C	NC	N/A	U		
☐	☒	☐	☐	LS-H; PR-H. FALL-PRONE CONTENTS: Equipment, stored items, or other contents weighing more than 20 lb whose center of mass is more than 4 ft above the adjacent floor level are braced or otherwise restrained. (Commentary: Sec. A.7.11.3. Tier 2: Sec. 13.8.2)	
C	NC	N/A	U		
☐	☐	☒	☐	LS-not required; PR-MH. ACCESS FLOORS: Access floors more than 9 in. high are braced. (Commentary: Sec. A.7.11.4. Tier 2: Sec. 13.8.3)	
C	NC	N/A	U		
☐	☐	☒	☐	LS-not required; PR-MH. EQUIPMENT ON ACCESS FLOORS: Equipment and other contents supported by access floor systems are anchored or braced to the structure independent of the access floor. (Commentary: Sec. A.7.11.5. Tier 2: Sec. 13.7.7 and 13.8.3)	

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C	NC	N/A	U		
☐	☐	☐	☒	LS-not required; PR-H. SUSPENDED CONTENTS: Items suspended without lateral bracing are free to swing from or move with the structure from which they are suspended without damaging themselves or adjoining components. (Commentary. A.7.11.6. Tier 2: Sec. 13.8.2)	

Mechanical and Electrical Equipment

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☒	☐	☐	LS-H; PR-H. FALL-PRONE EQUIPMENT: Equipment weighing more than 20 lb whose center of mass is more than 4 ft above the adjacent floor level, and which is not in-line equipment, is braced. (Commentary: A.7.12.4. Tier 2: 13.7.1 and 13.7.7)	
C	NC	N/A	U		
☐	☒	☐	☐	LS-H; PR-H. IN-LINE EQUIPMENT: Equipment installed in-line with a duct or piping system, with an operating weight more than 75 lb, is supported and laterally braced independent of the duct or piping system. (Commentary: Sec. A.7.12.5. Tier 2: Sec. 13.7.1)	
C	NC	N/A	U		
☐	☐	☐	☒	LS-H; PR-MH. TALL NARROW EQUIPMENT: Equipment more than 6 ft high with a height-to-depth or height-to-width ratio greater than 3-to-1 is anchored to the floor slab or adjacent structural walls. (Commentary: Sec. A.7.12.6. Tier 2: Sec. 13.7.1 and 13.7.7)	Some equipment was seen to have anchorage, but all could not be verified.

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C	NC	N/A	U		
☐	☐	☐	☒	LS-not required; PR-MH. MECHANICAL DOORS: Mechanically operated doors are detailed to operate at a story drift ratio of 0.01. (Commentary: Sec. A.7.12.7. Tier 2: Sec. 13.6.9)	
C	NC	N/A	U		
☐	☒	☐	☐	LS-not required; PR-H. SUSPENDED EQUIPMENT: Equipment suspended without lateral bracing is free to swing from or move with the structure from which it is suspended without damaging itself or adjoining components. (Commentary: Sec. A.7.12.8. Tier 2: Sec. 13.7.1 and 13.7.7)	
C	NC	N/A	U		
☐	☐	☐	☒	LS-not required; PR-H. VIBRATION ISOLATORS: Equipment mounted on vibration isolators is equipped with horizontal restraints or snubbers and with vertical restraints to resist overturning. (Commentary: Sec. A.7.12.9. Tier 2: Sec. 13.7.1)	
C	NC	N/A	U		
☐	☒	☐	☐	LS-not required; PR-H. HEAVY EQUIPMENT: Floor-supported or platform-supported equipment weighing more than 400 lb is anchored to the structure. (Commentary: Sec. A.7.12.10. Tier 2: 13.7.1 and 13.7.7)	

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C	NC	N/A	U		
☐	☐	☐	☒	LS-not required; PR-H. ELECTRICAL EQUIPMENT: Electrical equipment is laterally braced to the structure. (Commentary: Sec. A.7.12.11. Tier 2: 13.7.7)	
☐	☒	☐	☐	LS-not required; PR-H. CONDUIT COUPLINGS: Conduit greater than 2.5 in. trade size that is attached to panels, cabinets, or other equipment and is subject to relative seismic displacement has flexible couplings or connections. (Commentary: Sec. A.7.12.12. Tier 2: 13.7.8)	

Piping

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☒	☐	☐	LS-not required; PR-H. FLEXIBLE COUPLINGS: Fluid and gas piping has flexible couplings. (Commentary: Sec. A.7.13.2. Tier 2: Sec. 13.7.3 and 13.7.5)	
☐	☒	☐	☐	LS-not required; PR-H. FLUID AND GAS PIPING: Fluid and gas piping is anchored and braced to the structure to limit spills or leaks. (Commentary: Sec. A.7.13.4. Tier 2: Sec. 13.7.3 and 13.7.5)	

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C	NC	N/A	U		
☐	☐	☐	☒	LS-not required; PR-H. C-CLAMPS: One-sided C-clamps that support piping larger than 2.5 in. in diameter are restrained. (Commentary: Sec. A.7.13.5. Tier 2: Sec. 13.7.3 and 13.7.5)	
C	NC	N/A	U		
☐	☐	☒	☐	LS-not required; PR-H. PIPING CROSSING SEISMIC JOINTS: Piping that crosses seismic joints or isolation planes or is connected to independent structures has couplings or other details to accommodate the relative seismic displacements. (Commentary: Sec. A7.13.6. Tier 2: Sec.13.7.3 and Sec. 13.7.5)	

Ducts

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☐	☐	☒	LS-not required; PR-H. DUCT BRACING: Rectangular ductwork larger than 6 ft^2 in cross-sectional area and round ducts larger than 28 in. in diameter are braced. The maximum spacing of transverse bracing does not exceed 30 ft. The maximum spacing of longitudinal bracing does not exceed 60 ft. (Commentary: Sec. A.7.14.2. Tier 2: Sec. 13.7.6)	
C	NC	N/A	U		
☐	☐	☐	☒	LS-not required; PR-H. DUCT SUPPORT: Ducts are not supported by piping or electrical conduit. (Commentary: Sec. A.7.14.3. Tier 2: Sec. 13.7.6)	

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C	NC	N/A	U		
☐	☐	☒	☐	LS-not required; PR-H. DUCTS CROSSING SEISMIC JOINTS: Ducts that cross seismic joints or isolation planes or are connected to independent structures have couplings or other details to accommodate the relative seismic displacements. (Commentary: Sec. A.7.14.5. Tier 2: Sec. 13.7.6)	

Elevators

RATING				DESCRIPTION	COMMENTS
C	NC	N/A	U		
☐	☐	☐	☒	LS-H; PR-H. RETAINER GUARDS: Sheaves and drums have cable retainer guards. (Commentary: Sec. A.7.16.1. Tier 2: 13.8.6)	
C	NC	N/A	U		
☐	☐	☐	☒	LS-H; PR-H. RETAINER PLATE: A retainer plate is present at the top and bottom of both car and counterweight. (Commentary: Sec. A.7.16.2. Tier 2: 13.8.6)	
C	NC	N/A	U		
☐	☐	☐	☒	LS-not required; PR-H. ELEVATOR EQUIPMENT: Equipment, piping, and other components that are part of the elevator system are anchored. (Commentary: Sec. A.7.16.3. Tier 2: 13.8.6)	

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C	NC	N/A	U		
☐	☐	☐	☒	LS-not required; PR-H. SEISMIC SWITCH: Elevators capable of operating at speeds of 150 ft/min or faster are equipped with seismic switches that meet the requirements of ASME A17.1 or have trigger levels set to 20% of the acceleration of gravity at the base of the structure and 50% of the acceleration of gravity in other locations. (Commentary: Sec. A.7.16.4. Tier 2: 13.8.6)	
C	NC	N/A	U		
☐	☐	☐	☒	LS-not required; PR-H. SHAFT WALLS: Elevator shaft walls are anchored and reinforced to prevent toppling into the shaft during strong shaking. (Commentary: Sec. A.7.16.5. Tier 2: 13.8.6)	
C	NC	N/A	U		
☐	☐	☐	☒	LS-not required; PR-H. COUNTERWEIGHT RAILS: All counterweight rails and divider beams are sized in accordance with ASME A17.1. (Commentary: Sec. A.7.16.6. Tier 2: 13.8.6)	
C	NC	N/A	U		
☐	☐	☐	☒	LS-not required; PR-H. BRACKETS: The brackets that tie the car rails and the counterweight rail to the structure are sized in accordance with ASME A17.1. (Commentary: Sec. A.7.16.7. Tier 2: 13.8.6)	

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C	NC	N/A	U		
☐	☐	☐	☒	LS-not required; PR-H. SPREADER BRACKET: Spreader brackets are not used to resist seismic forces. (Commentary: Sec. A.7.16.8. Tier 2: 13.8.6)	
C	NC	N/A	U		
☐	☐	☐	☒	LS-not required; PR-H. GO-SLOW ELEVATORS: The building has a go-slow elevator system. (Commentary: Sec. A.7.16.9. Tier 2: 13.8.6)	

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SECTION 4

CALCULATIONS

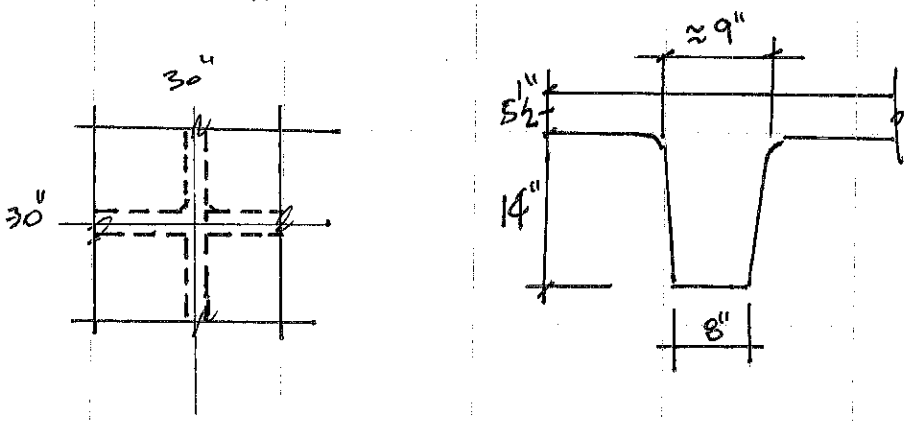
Project	PCC HT	Job No.
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Sheet description	SECTOR A BLDG WEIGHT	

ABHT STRUCTURAL ENGINEERS

GROUND FLOOR (SHT S-4) ASSUMED NOT A PARTICIPATING MASS AS IT IS SLAB on GRADE

FIRST FLOOR (SHTS-5)

WAFFLE SLAB DL: 30" SQ PANS, 14" DEEP w/ 5½" SLAB



WT of SLAB = $\left(5.5''/12\right)(2.5' \times 2.5')(.150\ kcf) = 0.429\ k$

WT of RIB = $\left(8.5''/12''/1\right)\left(14''/12''/1\right)(2.5' + 1.83')(.150) = 0.537\ k$

$\Sigma W = 0.966^k / (2.5')^2 =$ **0.155 KSF**

WT of DROP PANELS @ COLUMN:

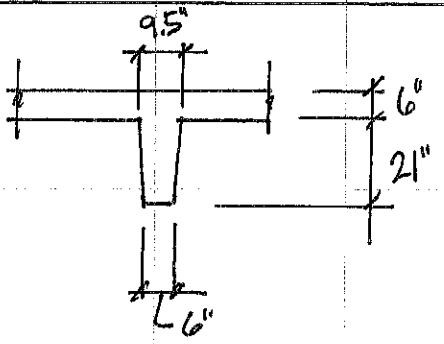
$(21.67')^2 \times \left(\frac{14'' + 5\frac{1}{2}''}{12''/1}\right)(.150\ kcf) =$ 114.5 kips (full panel)

57.2 kips (½ panel)

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Sheet description	SECTOR A FIRST FLR WT. (CONT.)		

ABHT STRUCTURAL ENGINEERS

CALC WT OF TJ SECTIONS BETWN 5-6



RIBS SPACED @ 4'-6" O.C. TYP.

WT OF RIB = $\left(\frac{6"+9.5"}{2}\right)(21")\left(\frac{1}{144}\right)(.150\,kcf) = .170^{k}/_{ft} \Big/ _{4.5'} = 0.0377\,KSF$

WT OF SLAB = $6"/_{12"} \times .150\,kcf = 0.075\,KSF$

$\Sigma WT = .0377 + .075 = \underline{0.113\,KSF}$

BEAMS: N-S DIRECTION

GRID 5: A-E

1B-12: $\left(\frac{24" \times 63\frac{1}{2}"}{144}\right)(160')(.150\,kcf) = 254^{k}$

TB-8: $\left(\frac{24" \times 27"}{144}\right)(19.5')(.150\,kcf) = 9.8^{k}$

GRID 5-A:

1B-11 (C-D): $\left(\frac{24" \times 63\frac{1}{2}"}{144}\right)(40')(.150) = 63.5^{k}$

1-5A (B-C): $\left[99^{\#}/_{ft} + \left(\frac{24" \times 36"}{144}\right)(150)\right](40') = 40^{k}$

GRID 5-B:

1B-11 (C-D) = 63.5^{k}

1-5B (B-C) = 40^{k}

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ABHT STRUCTURAL ENGINEERS

BEAM WT (CONT.)

GRID C:

IB-13: $\left(\frac{24" \times 40"}{144}\right)(40')(.150) = 40^k$

IB-10: $\left(\frac{24" \times 63.5"}{144}\right)(80')(.150) = 127^k$

IB-12: $\left(\frac{24" \times 63.5"}{144}\right)(40')(.150) = 63.5^k$

TB-C: $\left(\frac{24" \times 66"}{144}\right)(14.5')(.150) = 24^k$

GRID 7:

TB-1: $\left[\left(\frac{24" \times 30"}{144}\right)(23') + \frac{\left(\frac{30" + 66"}{2}\right)(15')(24")}{144}\right].150 kcf = 35.3^k$

TB-2: $\left(\frac{24" \times 66"}{144}\right)(14.5')(.150) = 24^k$

GRID 8:

TB-3: 35.3^k (SAME AS TB-1)

TB-4: 24.0^k (SAME AS TB-2)

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ABHT STRUCTURAL ENGINEERS

BEAMS (EAST-WEST DIR.)

GRID D:

GRIDS 5-5A & 5B-6

1B-7A: $\left(\frac{24" \times 63.5"}{144}\right)(15'-6")(.150kcf) = 24.6^k \times 2 = 49.2^k$

1B-8A: $\left(\frac{24 \times 63.5}{144}\right)(29')(.150) = 46.0^k$

GRID C:

1B-7B: 49.2^k

1B-8B: 46.0^k

GRID B:

BM 1B-5/6: STEEL PLATE GIRDER:

FLANGES: $(2)\left(\frac{2" \times 14"}{144}\right) \times 60' \times .490kcf = 11.43^k$

WEB: $\left[\left(\frac{1/2" \times 52"}{144}\right) \times 8' + \left(\frac{3/8" \times 52"}{144}\right) \times 52'\right] \times .490kcf = 4.2^k$

CONCRETE ENCASEMENT: $\left(\frac{24" \times 63.5"}{144}\right)(60')(150) = 95^k$

$\Sigma = 110.6^k$

GRID A:

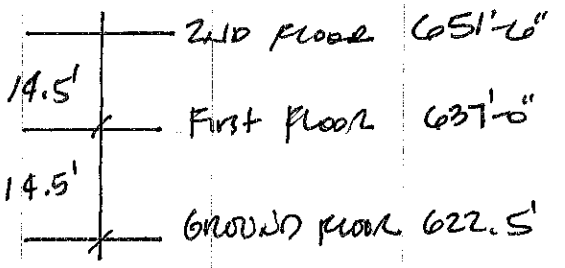
1B-1 THRU 1B-3: $\left(\frac{24" \times 63"}{144}\right)(60') \times .150kcf = 94.5^k$

1B-4 THRU 1B-6: $\left(\frac{24" \times 65.5"}{(144)}\right)(120')(.150) = 196.5^k$

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Sheet description	SECTOR A BLDG WT. (CONT.)	

ABHT STRUCTURAL ENGINEERS

COLUMNS: (TRIB W TO FIRST FLR)



COL's A5, A5A, A5B, A6, A7, A8 & A9:

WT COL./FT = 2'x2'x.150kcf = .600K/FT

TRIB HT = 14.5'

WT. EA COL. = .600K/' x 14.5' = 8.7K/COL

ΣW_T = 7 COL's x 8.7K/COL = 60.9 KIPS

COL's B5, B6, B7, B8 & B9

B5: WT BELOW FIRST FLR $\frac{24"\times 30"}{144} \times .150 \times \frac{14.5'}{2} = 5.43^K$

WT ABOVE FIRST FLR $2'\times 2'\times .150 \times 14.5'/2 = 4.35^K$

W 14x184 COL

$\Sigma = 9.78^K + .184^K/' \times 14.5' = 12.5^K$

B6: WT BELOW FIRST FLR: $\frac{30"\times 30"}{144} \times .150 \times \frac{14.5'}{2} = 6.8^K + .211 \times 14.5' = 9.9^K$

W14x211 COL. @ B-6

B7 & B8 WT ABOVE FIRST FLR: $2\times 2\times .150 \times 14.5'/2 = 4.35^K \times 3 \text{ COL's} = 13.1^K$

B9: WT COL = 2'x2'x.150 = .600K/'

TRIB HT = 14.5'

WT = .6 x 14.5' = 8.7K

Σ COL. WT ON B-LINE =

$12.5^K + 9.9^K + 13.1^K + 8.7^K = 44.2^K$

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Sheet description SECTOR A BLDG WT (CONT.)		

ABHT STRUCTURAL ENGINEERS

COLUMNS: TRIB WT TO FIRST FLOOR (CONT.)

C5: WT BELOW FIRST FLR: $\frac{24" \times 30"}{144} \times .150 \times 14.5' + .246^k/_1 \times 14.5'/_2 = 7.22^k$

WT ABOVE FIRST FLR: $2' \times 2' \times .150 \times 14.5'/_2 + .246^k/_1 \times 14.5'/_2 = 6.1^k$

$\Sigma = 13.3^k$

C5A: WT BELOW FIRST FLR: $2' \times 2' \times .150 \times 14.5'/_2 + .049^k/_1 \times 14.5'/_2 = 4.7^k$

C5B: SAME AS C5A = 4.7^k

C6: WT BELOW FIRST FLR: $\frac{30" \times 30"}{144} \times .150 \times 14.5'/_2 + .184^k/_1 \times \frac{14.5'}{2} = 8.1^k$

WT ABOVE FIRST FLR: $2' \times 2' \times .150 \times 14.5'/_2 + .184^k/_1 \times \frac{14.5'}{2} = 5.7^k$

$\Sigma = 13.8^k$

C7: WT BELOW FIRST FLR: $30 \times 30/144 \times .150 \times 14.5/_2 = 6.8^k$

WT ABOVE FIRST FLR: $2' \times 2' \times .150 \times 14.5'/_2 = 4.35^k$

$\Sigma = 11.2^k$

C8: $2' \times 2' \times .150 \times 14.5' = 8.7^k$

Σ COL. WT ON C-LINE $= 13.3 + 4.7 + 4.7 + 13.8 + 11.2 + 8.7 = \underline{56.4^k}$

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ABHT STRUCTURAL ENGINEERS

COLUMNS: TRIB WT. TO FIRST FLOOR (CONT.)

D5: WT. BELOW FIRST FLR = $\frac{24\times30}{144}\times.150\times\frac{14.5'}{2}+.184^{k}/_{1}\times\frac{14.5'}{2}=6.8^{k}$

WT. ABV FIRST FLR: $2'\times2'\times.150\times\frac{14.5'}{2}+.184^{k}/_{1}\times\frac{14.5'}{2}=5.7^{k}$

D5A: WT BELOW FIRST FLR: $2'\times2'\times.150\times\frac{14.5'}{2}=4.4^{k}$

D5B: SAME AS D5A = 4.4^{k}

D6: WT BELOW FIRST FLR: $\frac{30\times30}{144}\times.150\times\frac{14.5'}{2}+.211^{k}/_{1}\times\frac{14.5'}{2}=8.3^{k}$

WT. ABOVE FIRST FLR: $\frac{24\times24}{144}\times.150\times\frac{14.5'}{2}+.211^{k}/_{1}\times\frac{14.5'}{2}=5.9^{k}$

D7: WT BELOW FIRST FLR: $2'\times2'\times.150\times\frac{14.5'}{2}=4.4^{k}$

WT ABV. FIRST FLR: " 4.4^{k}

D8: WT BELOW FIRST FLR: $2'\times2'\times.150\times\frac{14.5}{2}=4.4^{k}$

WT. ABV. " " = " 4.4^{k}

Σ COLUMN WT @ LWR D = 53.1^{k}

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ABHT STRUCTURAL ENGINEERS

COLUMNS: TRIB WT TO FIRST FLR (CONT.)

E5: WT. BELOW FIRST FLR = $2' \times 2' \times .150 \times 10.5'/2 = 4.4^k$

WT. ABOVE 1ST " = " " " 4.4^k

E5A: SAME AS E5: WT ABOVE 1ST = 4.4^k
WT BELOW 1ST = 4.4^k

E5B: SAME AS E5A WT. ABOVE 1ST = 4.4^k
WT BLW 1ST = 4.4^k

E6: SAME AS E5A 4.4^k
4.4^k

E7: SAME AS E5A 4.4^k
4.4^k

Σ COL. WT ON LINE E = 44^k

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ABHT STRUCTURAL ENGINEERS

FIRST FLOOR - TRIBUTARY WALL WEIGHTS

NORTH-SOUTH DIRECTION

LINE 5; A-A.5 STAIR CORE WALL:

WT BELOW 1ST FLR = $\frac{10"}{12} \times 20.92' \times .150\ kcf \times \frac{14.5'}{2} = 18.9^k$

WT. ABV 1ST FLR = 18.9^k

GRIDS B-C

WT. BELOW 1ST FLR = $10"/12 \times 40' \times .150 \times 14.5/2 = 36.3^k$

WT. ABV 1ST FLR = $10"/12 \times 18' \times .150 \times \frac{14.5'}{2} = 16.3^k$

↑ (2) 9' long walls

GRIDS C-D

WT. BELOW 1ST FLR = $10"/12 \times 40' \times .150 \times 14.5'/2 = 36.3^k$

WT. ABV. 1ST FLR = $10"/12 \times 18' \times .150 \times 14.5'/2 = 16.3^k$

GRIDS D-E

WT. BELOW 1ST FLR = $10"/12 \times (6.17' + 20.92') \times .150 \times \frac{14.5'}{2} = 24.6^k$

WT. ABV. 1ST FLR = $10"/12\ (20.92') \times .150 \times 14.5'/2 = 19.0^k$

Σ WT LINE 5 = 186.6^k

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ABHT STRUCTURAL ENGINEERS

FIRST FLR TRIB. WALL WT (CONT.)

NORTH - SOUTH DIRECTION:

LINE 6: A-A.5:

WT BELOW 1ST FLR = $10''/12 \times 20.58' \times .150 \times \frac{14.5'}{2} = 18.7^K$

WT ABOVE 1ST FLR = $10''/12 \times 28.25' \times .150 \times 14.5'/2 = 25.6^K$

D.5-E

WT ABOVE 1ST FLOOR = $8''/12 \times 18.58' \times .150 \times \frac{14.5'}{2} = 13.5^K$

(NO WALL BELOW)

LINE 7

D-E

WT BELOW 1ST FLR = $\frac{10''}{12''/1} \times 38' \times .150 \times \frac{14.5'}{2} = 34.4^K$

(NO WALL ABOVE 1ST FLR)

LINE 8:

A-B

WT BELOW 1ST FLR = $8''/12 \times 38' \times .150 \times \frac{14.5'}{2} = 27.6^K$

(NO WALL ABOVE 1ST FLOOR)

LINE 9:

A-B

WT OF WALL BELOW 1ST FLR = $12''/12 \times 56' \times .150 \times \frac{14.5'}{2}$

$+ 10''/12 \times 28.58' \times .150 \times 14.5'/2 = 86.8^K$

WT ABOVE 1ST FLR = $8''/12 \times 38' \times .150 \times 14.5'/2 = 27.6^K$

BRICK VENEER ABOVE 1ST FLOOR = $40psf \times \frac{14.5'}{2} \times 38' = 11^K$

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ABHT STRUCTURAL ENGINEERS

FIRST FLOOR TRIB WALL WT. EAST-WEST DIRECTION.

GRID B: 7-8

WT BELOW 1ST FLR = $\frac{8''}{12} \times 37.5' \times .150 \times \frac{14.5'}{2} = 27.2^{k}$

(NO WALL ABOVE)

GRID B.7: 8-9

WT BELOW 1ST FLR = $\frac{10''}{12} \times 40' \times .150 \times \frac{14.5'}{2} = 36.3^{k}$

(NO WALL ABOVE)

GRID D: 7-8

WT BELOW 1ST FLR = $\frac{10'}{12} \times 38' \times .150 \times \frac{14.5'}{2} = 34.4^{k}$

(NO WALL ABOVE)

GRID E: 5-7

WT BELOW 1ST FLR = $\frac{10''}{12} \times 100' \times .150 \times \frac{14.5'}{2} = 90.6^{k}$

(NO WALL ABOVE)

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ABHT STRUCTURAL ENGINEERS

ELEVATOR WALL WT 5A-5B; B-C TRIB TO FIRST FLR

WT TRIB TO 1ST FLR = $\frac{10"}{12} \times .150 \times 10.33' \times 2 \times 14.5' = 37.5^k$

STAIR #5 WT.

STRUCT. STAIR AVE. "t" + PRECAST TREADS: 8"+8" = 16"

BELOW 1ST FLR: $\frac{16"}{12"/1} \times 10.92' \times .150 \times \frac{14'}{2} + \frac{6"}{12"/1} \times .150 \times 4.5' \times 2 \times \frac{14'}{2}$

$= 20^k$

ABOVE 1ST FLR = $\frac{16"}{12} \times 8.75' \times .150 \times (28'-7') + \frac{6"}{12"/1} \times .150 \times 4.5' \times 2 \times (28'-7')$

$+ \frac{6"}{12} \times .150 \times 5.33' \times 2 \times 6.5 = 56.1^k$

CONCRETE GUARDRAIL WALL AROUND INTERIOR STAIR CORE AT STAIR #5

$\frac{6"}{12"/1} \times .150 \times 3.33' \times 120' = 30^k$

CONCRETE GUARDRAIL & UPTURNED EDGE AT NORTH OVERHANG (Ref. 14/S3A)

4" UPTURNED EDGE: $4"/12 \times 1.5' \times 124.5' \times .150 = 9.4^k$

PRECAST CAP CONT. RAIL = $(1.75' \times 2 + .83')(3"/12) \times .150 \times 124.5' = 20.2^k$

EXTERIOR CLADDING/STOREFRONT

$10\ psf \times \frac{14.5'}{2} \times 312' = 22.6^k$

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ABHT STRUCTURAL ENGINEERS

FIRST FLOOR WAFFLE SLAB WT

$A_{WAFFLE\ GROSS} = 120' \times 160' - 80' \times 40' - 40' \times 40' - 40' \times 10.25'$

$= 13{,}990\ SF$

$A_{COL\ DROP\ PANELS} = (21.67')^2 \times 3 + \frac{(21.67')^2}{2} = -1{,}644\ SF$

$A_{MECH\ OPENING} = (18.17')^2 = -330\ SF$

$NET\ A_{WAFFLE} = 12{,}016\ SF$

DL WAFFLE SLAB $= 0.155\ KSF \times 12{,}016\ SF =$ **1,863 K**

DL DROP PANELS $= 114.5^K \times 3 + 57.2^K =$ **401 K**

CALC FIRST FLOOR JOIST WEIGHT

$A_{JOISTS} = 14.5' \times 140' + 60' \times 160' - 38' \times 27' = 10{,}604\ SF$

DL JOISTS $= 0.113\ KSF \times 10{,}604\ SF =$ **1,198 K**

UNIFORM DL

FLOORING	2 PSF
M/E	5
CLG	5
PARTITIONS	10
	22 PSF

$A_{FIRST\ FLOOR} = 13{,}990\ SF - 330\ SF + 10{,}604\ SF = 24{,}264\ SF$

UNIFORM DL $= 22 \times 24{,}264 =$ **533.8 K**

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ABHT STRUCTURAL ENGINEERS

SUMMARY OF SECTOR A FIRST FLOOR WT

WAFFLE SLAB	1,863 K
DROP PANELS @ COL'S	401 K
FIRST FLOOR JOISTS	1,198 K
FIRST FLOOR BEAMS	1,436 K
COLUMNS	259 K
WALLS (CONC.)	621 K
ELEVATOR CONC. WALLS	38 K
STAIR #5	76 K
CONC. GUARDRAIL WALL @ STAIR #5 CORE	30 K
CONC. GUARDRAIL @ NORTH EDGE	30 K
EXTERIOR CLADDING	23 K
FLRG, M/E, CLG, PARTITIONS	534 K
FIRST FLR TOTAL	6,509 K

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ABHT STRUCTURAL ENGINEERS

SECOND FLOOR

WAFFLE SLAB DL BETWN 6-9 & A-E:

DL SLAB = 0.155 KSF (SAME AS FIRST FLR)

DL DROP PANELS @ COL'S = 114.5^k (FULL 21.67' SQ)

WT OF TJ SECTIONS: = 0.113 KSF (SAME AS FIRST FLR)

SEE END OF 2ND FLOOR CALCS FOR TOTAL LOAD CALC

BEAMS: N-S DIRECTION:

GRID 5:

TB-8: $\frac{23" \times 27"}{144} \times .150 \times 14.5' = 9.4^k$

2B-9: $\frac{24" \times 65.5"}{144} \times .150 \times 80' = 131^k$

2B-10: 131^k (SAME AS 2B-9)

GRID 6: (A-E)

TB-6: $\frac{24 \times 65.5}{144} \times .150 \times 189' = 309^k$
2B-9 & 2B-10

GRID 7:

TB-1: 35.3^k x 2 = 70.6^k

TB-2: 24^k x 2 = 48^k

GRID 8:

TB-6: 24^k x 2 = 48^k

TB-5: 35.3^k x 2 = 70.6^k

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ABHT STRUCTURAL ENGINEERS

SECOND FLOOR - BEAMS N-S DIR. (CONT.)

GRID 9: A-E

2B-11 & 2B-5B: $\frac{24 \times 65.5}{144} \times .150 \times 160' = 262^k$

BEAMS - EAST-WEST DIRECTION

GRID A: 5-9

2B-1 → 2B-7: $\frac{24'' \times 65.5''}{144} \times .150 \times 194.5' = 319^k$

GRID B:

2B-5-6:

PLATE GIRDER WT: $\frac{2.25'' \times 14'' \times 2}{144} (.490)(60') + \frac{.5'' \times 51.5''}{144} \times 8' \times .490$

$+ \frac{.375'' \times 51.5''}{144} \times 52' \times .490 = 17.0^k$

CONC. BASEMENT: $\frac{24'' \times 60''}{144} \times .150 \times 60' = 99^k$

TB-5: 35.3^k (SAME AS TB-1)

TB-6: 24.0^k (" " TB-2)

GRID C

TB-7: $\frac{24 \times 65.5}{144} \times .150 \times 40' = 65.5^k$

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ABHT STRUCTURAL ENGINEERS

SECOND FLOOR BEAMS - EAST-WEST DIRECTION (CONT.)

GRID D:

2D 5/6: PLATE GIRDER WT = 17k (SAME AS 2B 5/6)
CONC. ENCASEMENT = 99k (" " ")

TB-5: 35.3k

TB-6: 24k

GRID E:

2B-1 → 2B-7 = 319k (SAME AS GRID A)

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ABHT STRUCTURAL ENGINEERS

COLUMNS - TRIB WT TO SECOND FLOOR

COL's A5, A5A, A5B, A6, A7, A8 & A9

WT. COL./FT = .600K/'

TRIB HT = 14.5'

WT./COL = .600 x 14.5' = 8.7K/COL

ΣWT = 7 col's x 8.7K/col = 60.9K

COL's B5, B6, B7, B8, B9

B5: $\frac{24\times24}{144} \times .150 \times 14.5' + .184^{K}/' \times 14.5' = 11.4^{K}$

B6: $\frac{24\times24}{144} \times .150 \times 14.5 + .211^{K}/' \times 14.5' = 11.8^{K}$

B7-B9: $\frac{24\times24}{144} \times .150 \times 14.5' \times 3 = 26.1^{K}$

Σ WT B-LINE = 49.3K

C5: $\frac{24\times24}{144} \times .150 \times 14.5' + .246^{K}/' \times 14.5' = 12.3^{K}$

C6: $\frac{24\times24}{144} \times .150 \times 14.5 + .184^{K}/' \times 14.5' = 11.4^{K}$

C7-C9: $\frac{24\times24}{144} \times .150 \times 14.5 \times 3 \text{ col's} = 26.1^{K}$

Σ WT C-LINE = 49.8K

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ABHT STRUCTURAL ENGINEERS

COLUMNS TRIB WT TO SECOND ROOF (CONT.)

D5: $\frac{24\times24}{144} \times .150 \times 14.5 + .184 \times 14.5' = 11.4^{k}$

D6': $\frac{24\times24}{144} \times .150 \times 14.5 + .211 \times 14.5 = 11.8^{k}$

D7–D9: $\frac{24\times24}{144} \times .150 \times 14.5 \times 3 \text{ col's} = 26.1^{k}$

TWT D-LINE = 49.3^k

E5, E5A, E5B, E6, E7, E8, E9

$\frac{24\times24}{144} \times .150 \times 14.5 \times 7 \text{ col's} = 60.9^{k}$

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ABHT STRUCTURAL ENGINEERS

SECOND FLOOR TRIBUTARY WALL WT's

NORTH-SOUTH DIRECTION

LINE 5 A-A.5 STAIR CORE WALLS:

WT BELOW 2ND FLR = 18.9k

WT ABV " " = 18.9k

B-C

WT BELOW 2ND = 16.3k ((2) - 9' long walls x 10"t)

WT ABV 2ND = $\frac{10"}{12"/1}$ x 9' x .150 x $\frac{14.5'}{2}$ = 8.2k

C-D

WT BELOW 2ND = 16.3k ((2) - 9' long walls x 10"t)

WT ABV. " = 8.2k ((1) 9' " " ")

D-E

WT. BELOW 2ND = 19k (STAIR WALL)

WT. ABV. 2ND = $10"/12$ x 28.58' x .150 x $\frac{14.5'}{2}$ = 25.9k

ΣWT LINE 5 = 132k

LINE 6

A-B: WT BELOW 2ND = 25.6k (10" x 28.25' long wall)

" ABV. " = 25.6k (")

D-E: WT. BELOW 2ND = 13.5k ← (8" x 18.58' WALL)

WT. ABV 2ND = $8"/12$ x 38' x .150 x $\frac{14.5'}{2}$ = 27.6k

ΣWT LINE 6 = 92.3k

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ABHT STRUCTURAL ENGINEERS

2ND FLR TRIB WALL WT's (CONT.) N-S DIR.

LINE 9:

A-B ⇕ D-E: WT. OF WALL BELOW = 27.6K (8" x 38' LONG)

" " " ABOVE = 27.6K (")

WT. OF BRICK ABOVE & BELOW = 40psf x 14.5' x 38' = 22K

ΣWT LINE 9 = 77.2K x 2 = 155K

EAST-WEST DIRECTION 2ND FLOOR:

THERE ARE NO WALLS. //

ELEVATOR WALL WT TRIB TO 2ND FLR

WT. = 37.5K

STAIR #5

$16''/_{12} \times 8.75' \times .150\ (7') + 6''/_{12} \times .150 \times 9.5' \times 2 \times 7' = 17^K$

CONC. GUARDRAIL WALL AROUND STAIR CORE

$6''/_{12} \times .150 \times 3.33' \times 198' = 49.5^K$

CONC. GUARDRAIL & UPTURNED EDGE @ NORTH & SOUTH EDGES:

4" UPTURNED EDGE: $4/_{12} \times 1.5' \times .150 \times 196' \times 2 = 29.4^K$

PRE-CAST CAP = $.162^K/_1 \times 196' \times 2 = 64^K$

CONC GUARDRAIL @ EAST EDGE:

$6''/_{12} \times .150 \times 3.33' \times 133' = 33^K$

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ABHT STRUCTURAL ENGINEERS

SECOND FLOOR MISC. (CONT.)

EXTERIOR CLADDING / STOREFRONT:

10 psf x 145 1/2 x 440' = 32K (ABOVE 2ND FLR)

22.6K (BELOW 2ND FLR)

$\Sigma = 54.6^K$

UNIFORM DL

FLOORING	2
M/E	5
CLG	5
PARTITIONS	10
	22 psf

2ND FLOOR AREA = 194.5' x 189' = 36,760.5 FT²

A MECH OPENING = (18.17')² = − 330 FT²

A STAIR OPENING = 28' x 78' = − 2,184 FT²

$A_{NET\ 2ND} = 34,247\ FT^2$

UNIFORM DL = 22 psf x 34,247 = 754K

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ABHT STRUCTURAL ENGINEERS

SECOND FLOOR WAFFLE SLAB WT

$A_{\text{WAFFLE GROSS}} = 120' \times 160' = 19{,}200\ FT^2$

$A_{\text{COLUMN DROP PANELS}} = (21.67')^2 \times 6 = -2{,}817\ FT^2$

$A_{\text{MECH OPENING}} = (18.17')^2 = -330\ FT^2$

$\text{NET } A_{\text{WAFFLE}} = 16{,}053\ FT^2$

DL WAFFLE SLAB $= 0.155\ KSF \times 16{,}053\ FT^2 = \underline{2{,}488^K}$

DL DROP PANELS $= 114.5^K \times 6 = \underline{687^K}$

SECOND FLR JOISTS WT

$A_{\text{SECTOR A 2ND FLR}} = 194.5' \times 189' = 36{,}760.5\ FT^2$

$A_{\text{WAFFLE GROSS}} = -19{,}200\ FT^2$

$A_{\text{STAIR OPENING}} = 28' \times 78' = -2{,}184\ FT^2$

$\text{NET JOIST AREA} = 15{,}376.5\ FT^2$

DL JOISTS $= 0.113\ KSF \times 15{,}376.5\ FT^2 = \underline{1{,}738^K}$

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ABHT STRUCTURAL ENGINEERS

SUMMARY OF SECTOR A SECOND FLOOR WT

WAFFLE SLAB	2,488 K
DROP PANELS @ COL'S	687 K
2ND FLR JOISTS	1,738 K
2ND FLR BEAMS	2,134 K
COLUMNS	270 K
WALLS (CONC.)	379 K
ELEVATOR CONC. WALLS	38 K
STAIR #5	17 K
CONC. GUARDRAIL WALL @ STAIR CORE	49.5 K
CONC. GUARDRAILS @ N, S, & E EDGES	127 K
EXTERIOR CLADDING	55 K
FLOORING, M/E, CLG PARTITIONS	754 K
2ND FLR TOTAL	8,737 K

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ABHT STRUCTURAL ENGINEERS

ROOF SHEET S-7

WAFFLE SLAB DL BETWN 6-9 ; A-E

DL SLAB = .155 KSF

DL DROP PANELS = 114.5K

WT OF TJ SECTIONS = .101 KSF (AVE THICKNESS)

SEE END OF ROOF CALCS FOR TOTAL LOAD CALC

BEAMS: N-S DIRECTION

GRID 5:

TB8-R $\frac{23" \times 27"}{144} \times .150 \times 14.5' \times 2 = 18.8^K$

RB9 & RB-10, A-E

$\frac{24 \times 66}{144} \times .150 \times 160' = 264^K$

GRID 5-A, B-D

$\frac{24" \times 36"}{144} \times .150 \times 80' + .099^K/_1 \times 80' = 80^K$

GRID 5-B, B-D

SAME AS GRID 5-A = 80K

GRID 6

TB6, RB9 & RB10 : $\frac{24" \times 66"}{144} \times .150 \times 189' = 312^K$

GRID 7

TB1R = $35.3^K \times 2 = 70.6^K$

TB2R = $24^K \times 2 = 48^K$

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ABHT STRUCTURAL ENGINEERS

SECTOR A ROOF BEAMS (CONT.) N-S DIR

GRID 8

TB6R = 24ᵏ x 2 = 48ᵏ

TB 5R = 35.3ᵏ x 2 = 70.6ᵏ

GRID 9

RB10 & RB11 $\frac{24" \times 66"}{144} \times .150 \times 160' = 264^k$

BEAMS: EAST-WEST DIRECTION

GRID A: RB-1 → RB-7

$\frac{24 \times 66}{144} \times .150 \times 194.5' = 321^k$

GRID B:

RB/5-6:

PLATE GIRDER WT = 17ᵏ

CONC. ENCASEMENT = 99ᵏ

TB-5R = 35.3ᵏ (SAME AS TB-1)

TB-6R = 24.0ᵏ (SAME AS TB-2)

GRID C

RC/5-6:

PLATE GIRDER WT = 17ᵏ

CONC. ENCASEMENT = 99ᵏ

TB-7R

$\frac{24" \times 30"}{144} \times .150 \times 40' = 30^k$

GRID D

SAME AS GRID B: 17ᵏ + 99ᵏ + 35.3ᵏ + 24ᵏ = 175.3ᵏ

GRID E: SAME AS GRID A = 321ᵏ

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ABHT STRUCTURAL ENGINEERS

SECTOR A BLDG WT. → TRIB COLUMN WT TO ROOF

COL's A5 → A9

WT/COL = .600^K/_L

TRIB HT = 14.5'/2 = 7.25'

WT/COL = .6 × 7.25 = 4.35^K

ΣWT = 7 COL's × 4.35^K = **30.5^K**

COL's B5 → B9

B5: $\frac{24\times24}{144}$ × .150 × 7.25' + .184 × 7.25' = 5.7^K

B6: " + .211 × 7.25' = 5.9^K

B7, B8, & B9: $\frac{24\times24}{144}$ × .15 × 7.25 × 3 = 13.1^K

Σ = **24.7^K**

COL's C5 → C9

C5: $\frac{24\times24}{144}$ × .15 × 7.25 + .246 × 7.25' = 6.13^K

C6: " + .184 × 7.25 = 5.7^K

C7, C8 & C9: = 13.1^K (same as B7-B9)

ΣWT C-LINE = **24.9^K**

COL's D-5 → D-9

SAME AS B-LINE = **24.7^K**

COL's E5 → E9

SAME AS A-LINE = **30.5^K**

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ABHT STRUCTURAL ENGINEERS

ROOF TRIBUTARY WALL WT'S

NORTH-SOUTH DIRECTION

LINE 5 : A-A.5

WT = 18.9^k

B-C

WT = 8.2^k

C-D

WT = 8.2^k

D-E

WT = 25.9^k

Σ WT LINE 5 = 61.2^k

LINE 6

A-B : WT = 25.6^k

D-E : WT = 27.6^k

Σ = 53.2^k

LINE 9:

A-B = WT = 27.6^k + 11^k = 38.6^k

D-E = WT = 27.6^k + 11^k = 38.6^k

Σ = 77.2^k

EAST-WEST DIRECTION

NO WALLS IN E-W DIR.//

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ABHT STRUCTURAL ENGINEERS

SECTOR A ROOF WEIGHT (CONT.)

6" CONC. WEIGHT @ SKYLIGHT RIM:

$\frac{6''}{12} \times 9' \times .150 \times 218' = 147^k$

SKYLIGHT ROOF

$15\ psf \times 29' \times 80' = 35^k$

EXTERIOR CLADDING

$10\ psf \times 14.5'/2 \times 440' = 32^k$

UNIFORM DL

ROOFING	5 psf
M/E	5 psf
CLG	5 psf
PARTITION	5 psf
	20 psf

ROOF AREA = $194.5' \times 189' = 36,760.5$ SQFT

SUBTRACT SKYLIGHT AREA = $29' \times 80' = 2,320\ FT^2$

NET $A_{ROOF} = 34,440.5\ FT^2$

Σ UNIFORM DL = $20\ PSF \times 34,440.5\ FT^2 = 688.8^k$

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ABHT STRUCTURAL ENGINEERS

ROOF WAFFLE SLAB WT:

AREA OF WAFFLE SLABS = 120' x 160' = 19,200 SF

COL DROP PANELS = (21.67')² x 6 = 2817 SF

NET WAFFLE SLAB AREA = 16,383 SF

DL WAFFLE SLABS = 0.155 KSF x 16,383 SF = 2,540 K

DL DROP PANELS = 114.5 K/PANEL x 6 = 687 K

ROOF JOISTS WT:

$A_{SECTOR\ A\ ROOF}$ = 194.5' x 189' = 36,760.5 FT²

SKYLIGHT AREA = 29' x 80' = − 2320 FT²

WAFFLE SLABS AREA = − 19,200 FT²

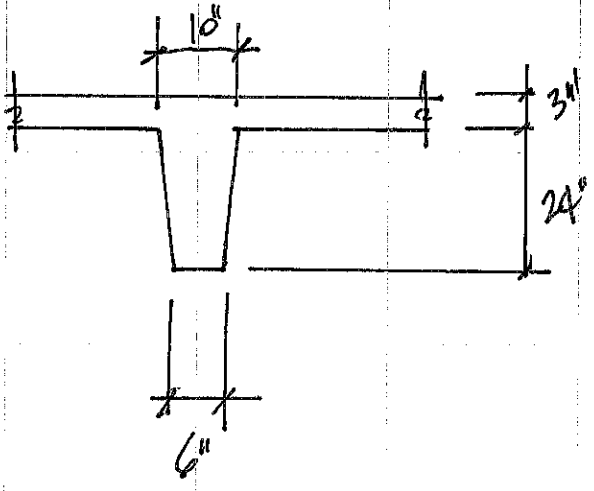
NET JOIST AREA = 15,240.5 FT²

DL JOISTS = .101 KSF x 15,240.5 FT² = 1,539 K

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ABHT STRUCTURAL ENGINEERS

CALC OPTIONAL TJ WEIGHT w/ 24" RIB & 3" SLAB



4'-6" o.c. RIB SPCG

WT. OF RIB = $\left(\frac{6+10}{2}\right)(24")\left(\frac{1}{144}\right)(.150) = 0.200^{k}/_{4.5'} = .044 KSF$

SLAB WT = $^{3}/_{12} \times .150 = .038 KSF$

Σ WT = 82 psf < 113 psf (ASSUMING 6" SLAB & 21" RIB)

ROOF SLAB DEPTH VARIES. 3" MIN.; 6" MAX.

MAX = $^{6"}/_{12} \times .150 + .044 = 0.119 KSF$

AVG. = $\frac{82+119}{2} = 100.5$ PSF ← USE .101 KSF AT ROOF

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ABHT STRUCTURAL ENGINEERS

SUMMARY OF SECTOR A ROOF WT

WAFFLE SLABS	2,540 K
DROP PANELS @ COL'S	687 K
ROOF JOISTS	1,539 K
ROOF BEAMS	2,395 K
COLUMNS	135 K
WALLS (CONCRETE)	192 K
SKYLIGHT 6" CONC. WALLS	147 K
SKYLIGHT ROOF	35 K
EXTERIOR CLADDING	32 K
ROOFING, M/E, CLG, PARTITIONS	689 K
ROOF TOTAL	8,391 K

PCC Sylvania
Sector B - Building Weight

Roof

				area			count	WT	
Roof beams		119.83	0.16	19.1728					
		119.83	0.143229	17.16315	36.34	cf	8	142436.9	#
		81	0.625	50.625					
				9.28					
		81	1.5	121.5	181.41	cf	1	88888.5	#

		length	count	lb/ft		
	12B14	160	15	14	33600.0	#
	L8x6x1/2	120	2	23.2	5568.0	#
	L6x4x1/2	160	1	16	2560.0	#
	W16x40	40	8	40	12800.0	#
	W16x50	40	1	50	2000.0	#
	L4x4x3/8	242	1	9.72	2352.2	#
	12B14	18	28	14	7056.0	#

Roof Deck

		area		wt		
	1.5"x20 GA	19200	sf	2.3	44160.0	#
	1.5"x20 GA	3200	sf	2.3	7360.0	#

Concrete Beams 150 pcf

		length	area		
cap	1'2x1'4	406	1.56	94766.5	#
beam	1'2x3'	160	3.51	84240.0	#
	1'2x5'4	80	6.24	74833.2	#
	1'10x5'6	80	10.07	120780.0	#
	1'x2'5	160	2.33	55920.0	#
	1'6x2'10	80	4.245	50940.0	#
	2'x2'10	80	5.66	67920.0	#
	1'x1'5	80	1.42	17040.0	#
	.67'x4'5	40	2.96	17768.4	#
	0.67'*5'11	32	3.97	19038.7	#
	5'11x2	80	11.84	142080.0	#
	5'6x2	80	11	132000.0	#
	1'10x2	40	3.66	21960.0	#

Slab

	4.5	3200	2160000.0	#
	1.5	551.15	124007.6	#

length	area	count		
40	0.78	30	141102.0	#
20	0.78	10	23517.0	#
27.33	0.78	14	44990.4	#

PCC Sylvania
Sector B - Building Weight

Roof

Walls			150 pcf	
	height	length	thickness	
west	11.75	160	0.67	188940.0 #
W cols	11.75	14	1.33	32817.8 #
north	11.75	106.5	0.67	125763.2 #
N cols	11.75	10	0.5	8812.5 #
north 4-5	4.5	26.5	0.67	11984.6 #
south	4.0	53	0.67	21306.0 #
south	5.1	80	0.67	40843.2 #
S cols	5.1	10	0.5	3810.0 #
int.	11.75	46	0.67	54320.3 #
cols	11.75	4	1.00	7050.0 #
stairs	7.17	43.5	0.83	38830.9 #
	7.17	24	0.67	17294.0 #

Clay Brick Walls (8")		77 psf	
	height	length	
int	11.46	72	63534.2 #
int	4.5	78	27027.0 #

CMU Walls (8")		84 psf	
	height	length	
int	4.33	38	13821.4 #

Brick Cladding		40 psf	
	height	length	
North	11.5	26.5	12190.0 #
	11.5	26.5	12190.0 #
West	11.5	38	17480.0 #
	11.5	38	17480.0 #
South	4	38	6080.0 #
	4	38	6080.0 #

Cladding		10 psf	
	height	length	
North	4.5	12.5	562.5 #
	11.75	12.5	1468.8 #
South	4	12.5	500.0 #
	4	12.5	500.0 #

Additional Load

roof area = 25600 sf

Roofing	2 psf		51200 #
M/E	5 psf		128000 #
Ceiling	5 psf		128000 #
Partitions	10 psf		256000 #

TOTAL

5035571.8 #
5035.6 *kips*

PCC Sylvania
Sector B - Building Weight

Second Floor

Slab 150 pcf

	length	width	thickness	totals	
	160	11.5	0.5	138000.0	#
E stair	42	11.5	0.5	36225.0	#
drop area	8	78	1.625	152100.0	#
drop area	31	16	1.625	120900.0	#

Waffle Slab 155 psf

	length	width	count		
	39	25.67	2	310350.3	#
	17.17	12.5	2	66533.8	#
	39	25.67	2	310350.3	#
	31	31	2	297910.0	#

Beam 150 pcf

	length	width	height		
	38	1.00	4.17	23769.0	#
	78	1.33	3.00	46683.0	#
	38	2	3.00	34200.0	#

Walls 150 pcf

	height	length	thickness		
W Stair	8	34	0.5	20400.0	#
	8	23	0.67	18492.0	#
int core	7.25	78	0.67	56832.8	#
	7.25	76	0.67	55375.5	#
E Stair	14.42	23	0.67	33331.8	#
	14.42	44	0.83	78992.8	#
north 4-5	11.75	26.5	0.67	31293.2	#

Columns

	14.42	4	2	17304.0	#
	7.25	2	2	4350.0	#

Cladding 10 psf

	height	length		
north 4-5	11.75	12.5	1468.8	#

Clay Brick Walls (8") 77 psf

	height	length		
int	8.125	78	48798.8	#

Additional Load

roof area = 8372.8 sf

flooring	2	psf	16745.6	#
M/E	5	psf	41864	#
Ceiling	5	psf	41864	#
Partitions	10	psf	83728	#

TOTAL

2087862.5 #
2087.9 *kips*

PCC Sylvania
Sector B - Building Weight

First Floor

Slab			150 pcf			
	length	width	thickness		totals	
E stair	42	11.5	0.42		30429.0	#
W stair	48.42	11.5	0.5		41762.3	#
stage	80	11.5	0.35		48875.0	#
balcony	25.25	8.42	0.67		21366.8	#
	121.92	1.5	0.55		15087.6	#

Waffle Slab			155 psf			
	length	width	count			
	160	107.67	1		2670216.0	#
	110.25	12.33	1		210704.3	#
	40	26.67	2		330708.0	#
	18.08	13.33	2		74712.0	#
balcony	121.92	6.42	1		121322.6	#
Drops	21.67	21.67	6	88.83 psf	250281.5	#

Beam			150 pcf			
	length	width	height			
balcony	147.17	0.50	0.83		9161.3	#
north	80	1.33	3.67		58573.2	#
	80	1.33	6.00		95760.0	#
west	80	1.33	3.67		58573.2	#
	80	1.33	6.00		95760.0	#
W int.	80	2.0	4.00		96000.0	#
	37	2.0	2.50		27750.0	#

PCC Sylvania
Sector B - Building Weight

First Floor

Walls		150 pcf			
	height	length	thickness		
W Stair	8	15.58	0.5	9348.0	#
	15.25	23	0.67	35250.4	#
	7.25	5.5	0.5	2990.6	#
int core	14.5	76	0.67	110751.0	#
	7.25	78	0.67	56832.8	#
	7.25	11.5	0.67	8379.2	#
	7.25	52.43	0.67	38201.8	#
	10.75	44	0.67	47536.5	#
	3.75	36	0.67	13567.5	#
	7.25	18	0.83	16247.3	#
	7.25	31.75	0.67	23133.8	
E Stair	14.5	23	0.67	33516.8	#
	14.5	44	0.83	79431.0	#
	7.25	11	0.5	5981.3	#
South	14.5	160	0.83	288840.0	#
S Cols	14.5	10	0.33	7177.5	#
North	15.75	26.5	0.67	41946.2	#
	16.92	15.33	0.67	26068.1	#
	22.68	64.67	0.67	147404.9	#
	4.67	64.67	1.17	53002.6	#
N Cols	16.92	10	0.5	12690.0	#
North 4-5	16.25	26.5	0.67	43277.8	#
	2.75	40	1.17	19305.0	#
West	15.75	80	0.67	126630.0	#
West	16.92	80	0.67	136036.8	#
W cols	18.5	14	1.33	51670.5	#
W int.	19	46	0.67	87837.0	#
stage	3	38	0.67	11457.0	#
N int.	7.25	92	0.67	67033.5	#
	7.25	60.51	0.67	44089.1	#

Columns

gym	7.25	12	2	26100.0	#
e int. cols	14.5	6	2	26100.0	#
w int. cols	11.75	4	1.00	7050.0	#
	7.25	8	1	8700.0	#

Clay Brick Walls (8")		77 psf		
	height	length		
int	11.46	72	5527478.9	#

CMU Walls (6")		63 psf			
	height	length	count		
stage	2.94	11.5	22	46860.7	#

Canopy		150 pcf				
	width	length	thickness	count		
slab	6.5	13	0.33	2	8365.5	#
curb	2.33	7	0.5	4	4893.0	#
	2.33	13	0.5	2	4543.5	#

PCC Sylvania
Sector B - Building Weight

First Floor

Cladding		40 psf		
	height	length		
North	15.75	12.5	7875.0	#
North 4-5	16.25	12.5	8125.0	#
Brick Cladding		40 psf		
	height	length		
North	15.84	26.5	16785.1	#
	15.84	26.5	16785.1	#
West	15.84	38	24069.2	#
	15.84	38	24069.2	#
Additional Load				
roof area =	23522.6 sf			
Roofing	2 psf		47045.3	#
M/E	5 psf		117613.2	#
Ceiling	5 psf		117613.2	#
Partitions	10 psf		235226.4	#

TOTAL

12177974.7 *#*
12178.0 *kips*

PCC Sylvania
Sector B - Building Weight

Ground Floor

Slab			150	pcf			
	length	width	thickness			totals	
E stair	21.08	11.5	0.42			15272.5	#
W stair	48.84	12.33	0.5			45164.8	#
N stair	20.17	10	0.46			13917.3	#
Waffle Slab			155	psf			
	length	width	count				
	139.17	107.67	1			2322587.3	#
	111.17	12.33	1			212462.5	#
	20.83	42.33	1			136668.8	#
	19.17	40	1			118854.0	#
Drops	21.67	21.67	6	88.83	psf	250281.5	#
Beam			150	pcf			
	length	width	height				
W stair	21.75	1	3.00			9787.5	#
	11.5	1	3.00			5175.0	#
Walls			150	pcf			
	height	length	thickness				
W Stair	7.25	25.66	0.67			18696.5	#
	7.25	34.5	0.67			25137.6	#
	7.25	20.58	0.67			14995.1	#
	7.25	5.5	0.5			2990.6	#
	7.25	21.75	0.67			15847.6	#
	14.5	26.75	0.67			38981.4	#
int core	7.25	114	0.67			83063.3	#
	7.25	152	0.83			137199.0	#
	7.25	11.5	0.67			8379.2	#
	12.5	46.25	0.67			58101.6	#
	7.25	18	0.83			16247.3	#
E Stair	10.5	11.5	0.67			12135.4	#
	14.5	11.5	0.67			16758.4	#
	14.5	21.75	0.83			39264.2	#
	12	21.75	0.83			32494.5	#
	14.5	16.25	0.5			17671.9	#
	10.5	16.08	0.5			12663.0	#
	7.25	11	0.5			5981.3	#
South	14.5	160	0.83			288840.0	#
S Cols	14.5	10	0.33			7177.5	#
North	4.5	40	0.67			18090.0	#
	5.67	15.33	0.67			8735.6	#
	9.75	55.33	1.17			94676.5	#
N Cols	5.67	2	0.5			850.5	#
West	4.5	80	0.67			36180.0	#
	7.25	8	1.17			10179.0	#
	5.67	80	0.67			45586.8	#
	9.75	80	1.17			136890.0	#
W cols	5.67	14	1.33			15836.3	#
	7.5	14	0.83			13072.5	#
N int.	14.5	92	0.67			134067.0	#
	14.5	60.51	0.67			88178.2	#

PCC Sylvania
Sector B - Building Weight

Ground Floor

Walls - Retaining

grid 2	9.75	16.67	0.83	20235.3	#
	9.75	11.66	0.83	14153.8	#
grid A-B	9.75	20.83	0.83	25285.0	#
	9.75	11.66	0.83	14153.8	#
grid B1-C	9.75	19.83	0.67	19430.9	#
	9.75	17.49	0.67	17138.0	#

Columns

gym	14.5	12	2	52200.0	#
e int. cols	14.5	6	2	26100.0	#
w int. cols	14.5	8	1.00	17400.0	#
	7.25	1.5	1.5	2446.9	#

Brick Cladding 40 psf

	height	length		
North	4.34	26.5	4595.1	#
	4.34	26.5	4595.1	#
West	4.34	38	6589.2	#
	4.34	38	6589.2	#

Additional Load

roof area = 23697.6 sf

Roofing	2	psf	47395.2	#
M/E	5	psf	118488.0	#
Ceiling	5	psf	118488.0	#
Partitions	10	psf	236976.0	#

TOTAL

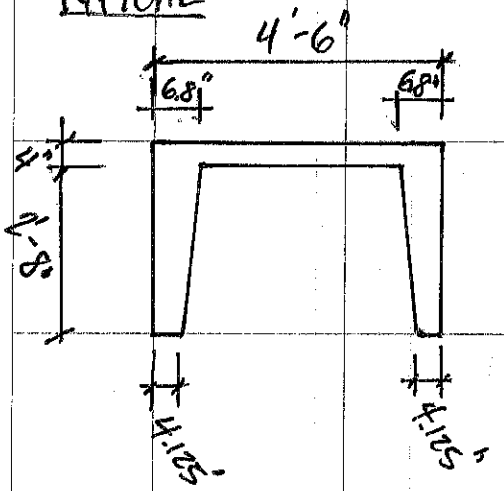
5337398.1 #
5337.4 *kips*

Project PCC		Job No. 18518
Client	Location	
Designed by	Date	Page of
Sheet description WEIGHT TAKE-OFFS		

ABHT STRUCTURAL ENGINEERS

POOL ROOF CHANNELS

TYPICAL



CONC. AREA

4.5' x .33' = 1.49 sf
2.67' x .34' x 2 = .91 sf
2.67' x .22'/2 x 2 = .59 sf
2.99 sf → 3.0 sf

150 pcf x 3.0 sf = 450 #/ft

AT COLS.

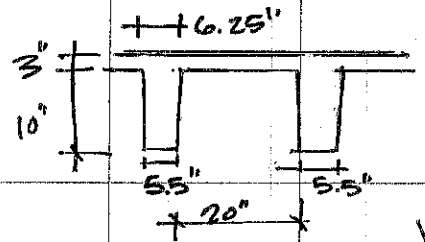
2' wide channel

CONC. AREA

2.0' x .33' = .66 sf
2.67' x .34' x 2 = .91 sf
2.67' x .22'/2 x 2 = .59 sf
2.16 sf

150 pcf x 2.16 sf = 324 #/ft

POOL DECK JOISTS



6.25" - 5.5" = .75"/2 = .375"

5.5" + .375" = 5.875"

JOIST: 5.875"/12" x 10"/12" = .41 sf x 1.67' = .683 cf
length

SLAB: .25' x 1.67' x 1.67' = .7 cf

20" x 20" section = .7 cf + .68 cf = 1.38 cf

1.38 cf x 150 pcf = 207 #/(1.67' x 1.67') = 74 #/sf

PCC Sylvania
Sector C - Building Weight

Roof

Roof Channels

			length	count		
4.5' wide	450	#/ft	84.5	38	1444950.0	#
			14.5	3	19575.0	#
2.0' wide	324	#/ft	84.5	7	191646.0	#
			14.5	2	9396.0	#

Concrete Beams 150 pcf

	length	width	height		
Grid 1	70.00	2.00	6.17	129570.0	#
Grid 5	70.00	2.00	6.17	129570.0	#
Grid H	53.5	2.00	3.17	50878.5	#
	53.5	2.00	3.17	50878.5	#
	80.0	2.00	5.17	124080.0	#
Grid E	160.0	1.17	8.13	228290.4	#
	14.5	2.00	3.17	13789.5	#

Slab 150 pcf

	height	length	thickness		
arch. Conc fill	84.50	189	0.04	95823.0	#

Walls

Total from ext. wall sheet = 1030688 # / 2 = 515344.0 #

150 pcf

	height	length	thickness		
north	4	53	0.67	21306.0	#
	5.17	80	0.67	41566.8	#
	3.92	160	0.83	78086.4	#
pilasters	9.09	8	0.33	3599.6	#

Cladding 10 psf

	height	length		
North	4	12.5	500.0	#
	4	12.5	500.0	#

Brick Cladding 40 psf

	height	length		
North	4	26.5	4240.0	#
	4	26.5	4240.0	#

Additional Load

roof area = 11200 sf

Roofing	2 psf	22400	#
M/E	5 psf	56000	#
Ceiling	5 psf	56000	#
Partitions	10 psf	112000	#

TOTAL

3404229.8 ***#***

3404.2 ***kips***

PCC Sylvania
Sector C - Building Weight

Exterior Walls Roof to Ground Floor

Beam		150	pcf		
	length	width	height		
West	36	2.00	3	32400.0	#
	14	1.17	3.00	7371.0	#
	14	1.17	3.00	7371.0	#
East	40	2.67	1.5	24030.0	#
	64	1.5	3.00	43200.0	#
South	76	1.17	3.00	40014.0	#
	72	1.5	3.00	48600.0	#
Walls		150	pcf		
	height	length	thickness		
West	10.33	64	0.67	66442.6	#
	9	28	0.67	25326.0	#
East	11.5	64	1.17	129168.0	#
	7.83	28	0.67	22033.6	#
South	10.33	76	0.67	78900.5	#
	9	76	1.17	120042.0	#
	9	72	1.17	113724.0	#
Columns					
West	23.33	6	2	41994.0	#
East	23.33	8	2	55992.0	#
	7.83	4.68	0.5	2748.3	#
South	20.33	6	2	36594.0	#
	22.33	4	2	26796.0	#
	11.33	4.68	0.5	3976.8	#
Brick Cladding		40	psf		
	height	length			
East	7.83	28		8769.6	#
West	10.33	64		26444.8	#
	9	28		10080.0	#
South	10.33	76		31403.2	#
	9	38		13680.0	#
Cladding		10	psf		
	height	length			
East	7.83	32		2505.6	#
West	9	35		3150.0	#
South	11.33	70		7931.0	#

TOTAL

1030688.1	***#***
1030.7	***kips***

PCC Sylvania
Sector C - Building Weight

Ground Floor

Slab 150 pcf

	length	width	thickness	totals	
	13	8	1.08	16848.0	#
	142.17	9.83	1.08	226400.0	#
	44.5	14.75	1.08	106332.8	#
pool edges	166	2	1.08	53784.0	#

Pan Joist Slab 74 psf

	length	width		
	160	12.33	145987.2	#
	56.83	17.83	74982.6	#
	36	8	21312.0	#

Walls Above

Total from ext. wall sheet = 1030688 # / 2 = 515344.0 #

Walls Below 150 pcf

	height	length	thickness		
W ext	7.25	70	1.17	89066.3	#
W cols	7.25	4	0.83	3610.5	#
S ext	7.25	160	1.17	203580.0	#
S cols	7.25	12	0.83	10831.5	#
E ext	7.25	70	1.17	89066.3	#
E cols	7.25	6	0.83	5415.8	#
Pool	7.25	196.33	0.67	143050.9	#
	7.25	46.33	0.83	41818.6	#
	7.25	80	0.83	72210.0	#
	7.25	93.66	0.83	84539.9	#
pilasters	7.25	4.32	0.75	3523.5	#
	7.25	2.5	0.58	1576.9	#
	7.25	1.5	0.58	946.1	#
	7.25	6	0.58	3784.5	#
	7.25	1.75	0.58	1103.8	#

Additional Load

roof area = 11200 sf

Flooring	2	psf	22400.0	#
M/E	5	psf	56000.0	#
Ceiling	5	psf	56000.0	#
Partitions	10	psf	112000.0	#

TOTAL

2161515.1 *#*

2161.5 *kips*

12000 SW 49th Ave, Portland, OR 97219, USA

Latitude, Longitude: 45.43843589999999, -122.73100449999998



Date	2/21/2019, 6:06:11 PM
Design Code Reference Document	ASCE41-13
Custom Probability	
Site Class	D - Stiff Soil

Type	Description	Value
Hazard Level		BSE-2N
S_S	spectral response (0.2 s)	0.985
S_1	spectral response (1.0 s)	0.424
S_{XS}	site-modified spectral response (0.2 s)	1.089
S_{X1}	site-modified spectral response (1.0 s)	0.668
F_a	site amplification factor (0.2 s)	1.106
F_v	site amplification factor (1.0 s)	1.576
ssuh	max direction uniform hazard (0.2 s)	1.093
crs	coefficient of risk (0.2 s)	0.901
ssrt	risk-targeted hazard (0.2 s)	0.985
ssd	deterministic hazard (0.2 s)	2.878
s1uh	max direction uniform hazard (1.0 s)	0.487
cr1	coefficient of risk (1.0 s)	0.871
s1rt	risk-targeted hazard (1.0 s)	0.424
s1d	deterministic hazard (1.0 s)	0.926

Type	Description	Value
Hazard Level		BSE-1N
S_{XS}	site-modified spectral response (0.2 s)	0.726
S_{X1}	site-modified spectral response (1.0 s)	0.446

Type	Description	Value
Hazard Level		BSE-2E
S_S	spectral response (0.2 s)	0.709
S_1	spectral response (1.0 s)	0.308
S_{XS}	site-modified spectral response (0.2 s)	0.874
S_{X1}	site-modified spectral response (1.0 s)	0.549
f_a	site amplification factor (0.2 s)	1.233
f_v	site amplification factor (1.0 s)	1.784

Type	Description	Value
Hazard Level		BSE-1E
S_S	spectral response (0.2 s)	0.293
S_1	spectral response (1.0 s)	0.11
S_{XS}	site-modified spectral response (0.2 s)	0.458
S_{X1}	site-modified spectral response (1.0 s)	0.26
F_a	site amplification factor (0.2 s)	1.566
F_v	site amplification factor (1.0 s)	2.359

Type	Description	Value
Hazard Level		T-Sub-L Data
T-Sub-L	Long-period transition period in seconds	16

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Project PCC Sylvania | Job No. 18518
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Sheet description ASCE 41-13 EVALUATION

ABHT STRUCTURAL ENGINEERS

Design Accelerations

BSE-1E vs. COP MIN = .75 (BSE-1N)

S_{XS} : .458 — .75(.726) = .545
S_{X1} : .26 — .75(.446) = .335
] Control

Pseudo Seismic

- MAIN BUILDING

$V = C S_a W$

$V = 1.0 \cdot .545 \cdot W$

$\boxed{V = .545W}$

$C = 1.0$ for type C2 of 4 stories (Table 4-8)

$S_a = \frac{S_{X1}}{T}$

$T = C_t h_n^{\beta}$

$= .02 \cdot 58^{(.75)} = .42$

$S_{X1} = .335$

$S_a = \frac{.335}{.42} = .80$

$S_{a\,max} = S_{XS} = .545$ ← controls

- POOL BUILDING

$V = C S_a W$

$1.2 \cdot .545 \cdot W$

$\boxed{V = .654W}$

$C = 1.2$ for type C2 of 2 stories

$S_a = \frac{S_{X1}}{T}$

$T = C_t h_n^{\beta} = .02 \cdot 43.5^{(.75)}$

$= .339$

$S_a = \frac{.335}{.339} = .988$

$S_{a\,max} = .545$ ← controls

PCC Sylvania

Shear Distribution

Sectors A+B

	Weight		Total WT	Height	WT*HT	WT*HT / ΣWT*HT	Shear
	Sector A	Sector B					
Roof	8391	5035.6	13426.6	58.0	778742.8	0.42	10962.9 kips
2nd	8737	2087.9	10824.9	43.5	470883.15	0.25	6628.9 kips
1st	6509	12178	18687	29.0	541923	0.29	7629.0 kips
Ground		5337.4	5337.4	14.5	77392.3	0.04	1089.5 kips
			48275.9		**1868941.3**		

V = .545*W = 26310.4 kips

Sector C (Pool)

	Weight	Height	WT*HT	WT*HT / ΣWT*HT	Shear
Roof/2nd	3404.2	43.5	148082.7	0.83	3004.1 kips
Ground	2161.5	14.5	31341.8	0.17	635.8 kips
	5565.7		**179424.5**		

V = .654*W = 3640.0 kips

North/South Shear Forces

Sectors A+B

Roof = 10962.9 kips
2nd = 17591.8 kips
1st = 25220.9 kips
Ground = 26310.4 kips

Sector C

Roof/2nd = 3004.1 kips
Ground = 3640.0 kips

East/West Shear Forces

Sectors A+B+C

Roof = 10962.9 kips
2nd = 20596.0 kips
1st = 28225.0 kips
Ground = 29950.3 kips

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ABHT STRUCTURAL ENGINEERS

SHEAR STRESS CHECK

- EAST / WEST

$M_s = 3.0$
MAX STRESS
.11 KSI

ROOF

$$V_J^{avg} = \frac{1}{M_s}\left(\frac{V_J}{A_W}\right)$$

$V_J = 10962.9$ KIPS

Wall Capacities using max STRESS

grid A : $(28.42' + 42' + 29.42') \times .67'$
$\times 144$ IN/FT $= 9632.6 IN^2$

CAP: $.11 \times 3 \times 9632.6 IN^2 = 3178.7$ KIPS

grid E : $(28.42' + 42' + 29.42') \times .67'$
$\times 144$ IN/FT $= 9632.6 IN^2$

CAP. : $.11 \times 3 \times 9632.6 IN^2 = 3178.7$ KIPS

6357.4 KIPS

CAPACITY VS DEMAND

6357.4 KIPS < 10962.9 KIPS

NC

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ABHT STRUCTURAL ENGINEERS

SHEAR STRESS CHECK

· EAST / WEST

2ND

MAX STRESS
· 11 KSI
$M_S = 3.0$

V_J sectors A + B : 17591.8 KIPS
V_J sector C : 3004.1 KIPS >

Wall Capacities using max stress

grid A : 137.83' x .67' x 144 IN/FT = 13297.8 IN^2
CAP. : .11 x 3 x 13297.8 IN^2 = 4388.3K

grid B : 42' x .67' x 144 IN/FT = 4052.2 IN^2
CAP. : .11 x 3 x 4052.2 IN^2 = 1337.2K

grid D : 42' x .67' x 144 IN/FT = 4052.2 IN^2
CAP. : .11 x 3 x 4052.2 IN^2 = 1337.2K

grid E : 150' x .83' x 144 IN/FT = 17928 IN^2
CAP. : .11 x 3 x 17,928 IN^2 = 5916.2K

grid H : 84' x .67' x 144 IN/FT = 8104.3 IN^2
CAP. : .11 x 3 x 8104.3 IN^2 = 2674.4K

15653.3K

Portion of Sector C load to grid H walls

grid E : 5916.2K → .69 .69 x 3004.1 KIPS : 2072.8K
grid H : 2674.4K → .31 .31 x 3004.1 KIPS : 931.3K
8590.6K

Load to Sector A + B walls : 17591.8K
+ 2072.8K
19664.6K

grids A-E CAPACITY : 12978.9K < 19664.6K
NC

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ABHT STRUCTURAL ENGINEERS

SHEAR STRESS CHECK

EAST/WEST

1ST V_J = 19664.6K + 7629K = 27293.6K

Wall capacities using max stress

grid A: (29.42' + 28.42') x .67' x 144 IN/FT
= 5580.4 IN^2

CAP.: .11 KSI x 3 x 5580.4 IN^2 = 1841.5K

80' x .67' x 144 IN/FT = 7718.4 IN^2

CAP.: .14 KSI x 3 x 7718.4 IN^2 = 3241.7K

grid A.6: 92.83' x .67' x 144 IN/FT = 8956.2 IN^2

CAP.: .11KSI x 3 x 8956.2 IN^2 = 2955.6 KIPS

grid B: 13.33' x .67' x 144 IN/FT = 1286.1 IN^2

CAP.: .11KSI x 3 x 1286.1 IN^2 = 424.4 KIPS

grid B.7: 41' x .83' x 144 IN/FT = 4900 IN^2

CAP.: .14KSI x 3 x 4900 IN^2 = 2058 KIPS

grid D: 42' x .83' x 144 IN/FT = 5019.8 IN^2

CAP.: .14KSI x 3 x 5019.8 IN^2 = 2108.3 KIPS

grid D.2: 36' x .67' x 144 IN/FT = 3473.3 IN^2

CAP.: .11 KSI x 3 x 3473.3 IN^2 = 1146.2 KIPS

grid E: 75' x .83' x 144 IN/FT = 8964 IN^2

CAP.: .11KSI x 3 x 8964 IN^2 +
.14KSI x 3 x 8964 IN^2 = 6723.0 KIPS

20498.7 KIPS

CAPACITY VS DEMAND

20498.7KIPS < 27293.6K

NC

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ABHT STRUCTURAL ENGINEERS

SHEAR STRESS CHECK

- EAST / WEST

GROUND

V_J sector C: 635.8 KIPS

wall capacities using Max Stress

grid A: $[(81' \times 1.17') + (61' \times .83')] 144 \frac{IN}{FT}$

$= 20,937.6\ IN^2$

CAP.: $.14\ KSI \times 3 \times 20,937.6\ IN^2 = 8793.8\ KIPS$

$(25' + 40') 1.17' \times 144\ IN/FT = 10951.2\ IN^2$

CAP.: $.11\ KSI \times 3 \times 10951.2\ IN^2 = 3613.9\ KIPS$

grid A.6: $82.84' \times .67' \times 144\ IN/FT = 7992.4\ IN^2$

CAP.: $.11\ KSI \times 3 \times 7992.4\ IN^2 = 2637.5\ KIPS$

grid B: $54.33' \times .83' \times 144\ IN/FT = 6493.5\ IN^2$

CAP.: $.14\ KSI \times 3 \times 6493.5\ IN^2 = 2727.3\ KIPS$

grid E: $80' \times .83' \times 144\ IN/FT = 9561.6\ IN^2$

CAP.: $.14\ KSI \times 3 \times 9561.6\ IN^2 = 4015.9\ KIPS$

$61' \times .83' \times 144\ IN/FT = 7290.7\ IN^2$

CAP.: $.11\ KSI \times 3 \times 7290.7\ IN^2 = 2405.9\ KIPS$

grid H: $149.25' \times 1.17' \times 144\ IN/FT = 25,145.6\ IN^2$

CAP.: $25,145.6\ IN^2 \times .11\ KSI \times 3 = 8298.1\ KIPS$

SECTOR C LOAD TO GRID E & H WALLS

grid E: 6421.8 KIPS $\longrightarrow .44 \times 635.8K = 279.8K$

grid H: 8298.1 KIPS $\longrightarrow .56 \times 635.8K = 356K$

14719.9 KIPS

grid H: $356.0K + 931.3K$ (from above) $= 1287.3K <$ 8298.1 KIPS

OK

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ABHT STRUCTURAL ENGINEERS

LOAD TO SECTOR A+B WALLS

1st floor shear: 27,293.6K

A+B ground shear: 1,089.5K

grid E shear: 279.8K

28,662.4K

CAPACITY WALLS A-E = 24,194.3 KIPS

CAPACITY VS. DEMAND

24,194.3 KIPS < 28,662.4K

NC

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ABHT STRUCTURAL ENGINEERS

SHEAR STRESS CHECK

- NORTH/SOUTH SECTORS A+B

ROOF

MAX SHEAR STRESS = .11 KSI

$M_s = 3.0$

$$V_j^{avg} = \frac{1}{M_s}\left(\frac{V_J}{A_W}\right)$$

A_W =

grid 1: 120' x .67'	=	80.4 sf
grid 1.3: (23' x 2) x .67'	=	30.8 sf
grid 4.7: (21.75' x 2) x .83'	=	36.1 sf
grid 5: (21.75' + 21.75' + 20.33') x .83	=	53.0 sf
grid 6: (40' + 30') x .83'	=	58.1 sf
grid 9: (40' x 2) x .67'	=	53.6 sf
		312 sf

312 sf x 144 IN^2/FT^2 = 44928.0 IN^2

V_J = 10962.9 KIPS

$$V_j^{avg} = \frac{1}{3.0}\left(\frac{10{,}962.9^k}{44{,}928.0\,IN^2}\right) = .081 \text{ KSI}$$

.081 KSI < .11 KSI OK

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ABHT STRUCTURAL ENGINEERS

SHEAR STRESS CHECK

- NORTH/SOUTH SECTORS A+B CONT.

[2ND]

V_J = 17591.8 KIPS

Aw = grid 1: 160'x.67' = 107.2 sf
grid 1.3: (16.0'x2)x.67' = 21.4 sf
grid 4: 80'x.67' = 53.6 sf
grid 4.7: (21.75'x2).83' = 36.1 sf
grid 5: (21.75'+21.75'+11.0'+11.0'+20.33')x.83' = 71.2 sf
grid 6: (21'+30')x.83' = 42.3 sf
grid 9: (40'+40')x.67' = 53.6 sf
385.4 sf

$385.4\ sf \times 144 \frac{in^2}{ft^2} = 55{,}497.6\ in^2$

$V_J^{avg} = \frac{1}{3.0}\left(\frac{17591.8\ K}{55{,}497.6\ in^2}\right) = .106\ ksi$

.106 ksi < .11 ksi OK

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ABHT STRUCTURAL ENGINEERS

SHEAR STRESS CHECK

MAX. SHEAR STRESS
- 3000 PSI CONC.
  $\frac{2\sqrt{3000\,PSI}}{1000} = .11\,KSI$
- 5000 PSI CONC
  $\frac{2\sqrt{5000}}{1000} = .14\,KSI$

- NORTH/SOUTH SECTORS A+B

1ST

V_J = 25,220.9 KIPS

Wall Shear Capacities Based on wall strength

grid 1: $f'c = 3000\,PSI \rightarrow .11\,KSI$

$A_W = 144' \times .67' \times 144\,IN/FT = 13893.1\,IN^2$

$.11\,KSI \cdot 3 \cdot 13893.1\,IN^2 = 4584.7\,KIPS$

grid 2.8: $f'c = 3000\,PSI \rightarrow .11\,KSI$

$A_W = .67' \times 20' \times 144\,IN/FT = 1929.6\,IN^2$

$.11\,KSI \cdot 3 \cdot 1929.6\,IN^2 = 636.8\,KIPS$

grid 4: $f'c = 3000\,PSI \rightarrow .11\,KSI$

$A_W = .67' \times 85.75' \times 144\,IN/FT = 8273.2\,IN^2$

$.11\,KSI \cdot 3 \cdot 8273.2\,IN^2 = 2730.2\,KIPS$

grid 4.7: $f'c = 3000\,PSI \rightarrow .11\,KSI$

$A_W = .83' \times 21.75' \times 2 \times 144\,IN/FT = 5199.1\,IN^2$

$.11\,KSI \cdot 3 \cdot 5199.1\,IN^2 = 1715.7\,KIPS$

grid 5: $f'c = 5000\,PSI \rightarrow .14\,KSI$

$A_W = .83' \times (21.75' + 21.75' + 25.75') \times 144\,IN/FT = 15448\,IN^2$

$.14\,KSI \cdot 3 \cdot 15448\,IN^2 = 6488.2\,KIPS$

grid 6: $f'c = 5000\,PSI \rightarrow .14\,KSI$

$A_W = .83' \times 22.75' \times 144\,IN/FT = 2719.1\,IN^2$

$.14\,KSI \cdot 3 \cdot 2719.1\,IN^2 = 1142.0\,KIPS$

grid 7: $f'c = 5000\,PSI \rightarrow .14\,KSI$

$A_W = .83' \times 40' \times 144\,IN/FT = 4780.8\,IN^2$

$.14\,KSI \cdot 3 \cdot 4780.8\,IN^2 = 2007.9\,KIPS$

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ABHT STRUCTURAL ENGINEERS

1ST Wall Shear Capacities Cont.

grid 8: $f'_c = 5000$ psi → .14 ksi

$A_w = (.67' \times 40' + .83' \times 52') \times 144 \text{ in}^2/\text{ft} = 10,074.2 \text{ in}^2$

$.141 \text{ ksi} \cdot 3 \cdot 10,074.2 \text{ in}^2 = 4261.4 \text{ kips}$

grid 9: $f'_c = 5000$ psi → .14 ksi

$A_w = (.83' \times 40' + 55' \times 1.17') \times 144 \text{ in}^2/\text{ft} = 14047.2 \text{ in}^2$

$.14 \text{ ksi} \cdot 3 \cdot 14047.2 \text{ in}^2 = 5899.8 \text{ kips}$

grid 1.3: $f'_c = 3000$ psi → .11 ksi

$A_w = .67'(18.58' + 21.75') \cdot 144 \text{ in}^2/\text{ft} = 3886.2 \text{ in}^2$

$.11 \text{ ksi} \cdot 3 \cdot 3886.2 \text{ in}^2 = 1282.4 \text{ k}$

30749.1 k

Wall capacity = 30749.1 k > 25,220.9 k = V_j

OK

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ABHT STRUCTURAL ENGINEERS

SHEAR STRESS CHECK

- NORTH/SOUTH SECTORS A + B CONT.

GROUND

V_J = 10,966.2 KIPS ← see attached sheet

A_w = grid 1: 109' x 1.17' = 124.3 sf
grid 2.8: 20' x .67' = 13.4 sf
grid 4: 120' x .83' = 99.6 sf
grid 4.7: 21.75' x .83' = 18.1 sf
grid 5: 34' x .83' = 28.2 sf
grid 1.3: 22.75' x .67' = 15.2 sf
298.8 sf

298.8 sf x 144 IN/FT = 43027.2 IN²

$V_J^{AVG} = \frac{1}{3.0}\left(\frac{10,966.2\ K}{43027.2\ IN^2}\right) = .085\ KSI$

.085 KSI < .11 KSI OK

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ABHT STRUCTURAL ENGINEERS

SHEAR STRESS CHECK

- NORTH/SOUTH SECTOR C. (POOL)

ROOF/2ND

$$V_j^{avg} = \frac{1}{M_s}\left(\frac{V_J}{A_W}\right)$$

$M_s = \frac{4.0+2.0}{2}$

$M_s = 3.0$ position retention

$A_W = (16'+16') \times 2 \times .67' = 42.9\,sf$

$42.9\,sf \cdot 144\frac{IN^2}{FT^2} = 6177.6\,IN^2$

$V_J = 3004.1\,KIPS$

$V_J^{avg} = \frac{1}{3.0}\left(\frac{3004.1}{6177.6\,IN^2}\right) = .162\,KSI$

$.162\,KSI > \left(\frac{.11\,KSI + .14\,KSI}{2}\right) = .125\,KSI$ ← NC

MAX SHEAR STRESS

$2\sqrt{F'c}$

$2\sqrt{5000\,PSI}$

$= 141.4\,PSI$

$\frac{}{1000\,\#/KIP}$

$= .141\,KSI$

OR

$2\sqrt{3000\,PSI}$

$= 109.5\,PSI$

$\frac{}{1000\,\#/K}$

$= .11\,KSI$

GROUND FLOOR

$A_W = 126.33' \times 1.17' = 147.8\,sf$

$147.8\,sf \cdot 144\frac{IN^2}{FT^2} = 21283.2\,IN^2$

$V_J = 3640\,KIPS$

$V_J^{avg} = \frac{1}{3.0}\left(\frac{3640\,KIPS}{21283.2\,IN^2}\right) = .057\,KSI$

$.057\,KSI < .125\,KSI$ ← OK

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ABHT STRUCTURAL ENGINEERS

CHECK OUT-OF-PLANE ANCHORAGE @ NORTH WALL OF GYM TO ROOF DIAPHRAGM:

$T_c = \psi S_{xs} w_p A_p$

$\psi = 1.2$ for Life Safety
$= 1.8$ for Immediate Occupancy

$S_{xs} = 0.545$

TRIB WEIGHT:

~ HT FROM TOP OF WALL TO GYM FLOOR = 30'

THICKENED SECTION @ TOP OF WALL = $(6.45' \times 1.17' + 1.17' \times .33')(.150) = 1.19^{k}/_{ft}$

TRIB WT OF 8" SECTION OF WALL = $\left(\frac{30'}{2} - 6.45'\right)(.67')(.150) = 0.86^{k}/_{ft}$

TRIB WT OF BRICK VENEER = (")(.040 KSF) = $0.342^{k}/_{ft}$

$\Sigma = 2.39^{k}/_{ft}$

$T_c = 1.2 \times .545 \times 2.39^{k}/_{1} = 1.56^{k}/_{ft}$

MAX BEAM SPACING = 8' O.C.

$T = 1.56^{k}/_{1} \times 8' = 12.48^{k}$ ⟶ CHECK W12x14 CONN. TO CONC. WALL

$R_n = \phi \times 0.6 \times 70ksi \times .707 \times .25" = 7.42^{k}/_{in}$ (1/4" FILLET) (1.0 ↓ ϕ)

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ABHT STRUCTURAL ENGINEERS

CHECK WELD CONN. AT TOP FLANGE (1)

$L_{WELD} = 4"$

$Q_{CL} = \phi R_n = 7.42^k/_{in} \times 4" = 29.7^k$

DCR = DEMAND / CAPACITY RATIO

$Q_{UF} \geq \frac{Q_E}{C_1 C_2 J} + Q_G(1.1)^0$

$K = 0.9$

$Q_{UF} = Q_E / C_1 C_2 J = 6.25^k / (1.1)(2.0) = 2.84^k$

$KQ_{CL} > Q_{UF} \quad 0.9 \times 29.7 = 26.7^k > 2.84^k$ OK

$DCR = 2.84 / 26.7^k = 0.106 < 1.0$ OK

CHECK WELD CONN AT BOT FLANGE (2)

$L_{WELD} = 3" \times 2 + 2" = 8"$

$Q_{CL} = 7.42^k/_{in} \times 8" = 59.4^k$

$Q_{UF} = 2.84^k$

$KQ_{CL} = 0.9 \times 59.4^k = 53.4^k > 2.84^k$ OK

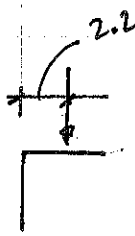
$DCR = 2.84/53.4 = 0.053 < 1.0$ OK

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ABHT STRUCTURAL ENGINEERS

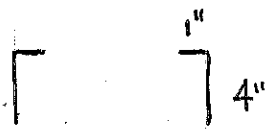
CHECK WELD CONNECTION OF L4x4x½ TO BACK EMBED R: (3)

CALC GRAVITY EFFECTS:



$Q_{G1} = (15psf + 27psf)(8')(17.5'/2) = 2.94^k$

$1.1 Q_{G1} = 3.23^k$



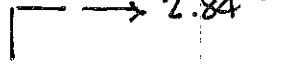
$F_{V\,vert\,G} = 3.23^k / 10" = .323^k/_{in}$

$S_{WELD} = d^2/_3 = 4^2/_3 = 5.33$

$F_{T\,G} = \frac{3.23^k \times 2.25"}{5.33} = 1.36^k/_{in}$

OUT OF PLANE EFFECTS:

ASSUME ALL OUT OF PLANE RESISTED BY 2" OF TOTAL RETURN WELD AT TOP OF ANGLE (CONSERVATIVE)

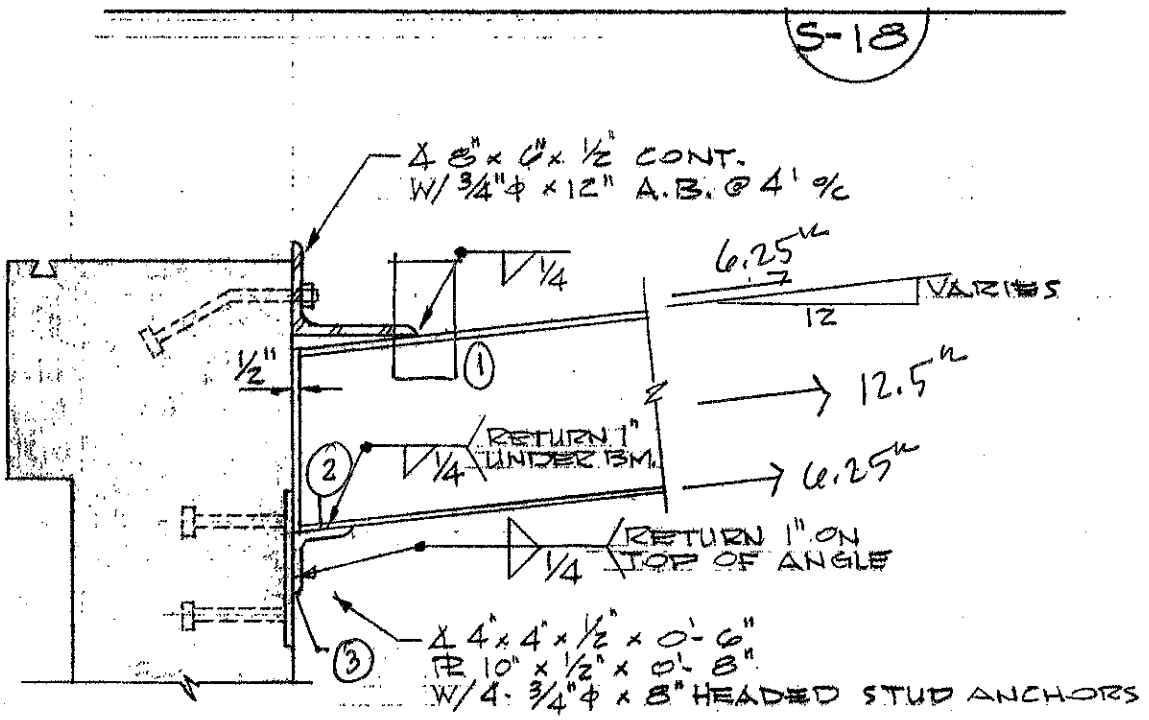


$F_{T_H} = \frac{2.84^k}{2"} = 1.42^k/_{in}$

CALC. RESULTANT FORCE ON WELD: $\left((.323^k/_{in})^2 + (1.36 + 1.42)^2\right)^{1/2} = 2.8^k/_{in}$

$kQ_{CL} = 0.9 \times 7.42^k/_{in} = 6.67^k/_{in} > 2.8^k/_{in}$ ok

DCR = 2.8 / 6.67 = 0.41 < 1.0

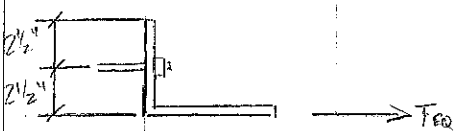


DETAIL 4
1"=1'-0" S-18

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Designed by AJK	Date 03/08/2019	Page of
Sheet description		

ABHT STRUCTURAL ENGINEERS

Top Anchor



$T_u = 3.125$ kips

$M_1 = 3.125 \text{ kips}(2.5 \text{ in}) = 7.81$ kip-in

$T_{u(\text{ANCHORS})} = 3.125 \text{ kips} + \frac{7.81 \text{ k-in}}{(2.5 \text{ in})(.9)} = 6.60$ kips

$Q_{UF} = \frac{6.60 \text{ kips}}{1.10\,(2.0)} = 3.0$ kips

[Convert Q_{UF} for entering into HILTI]

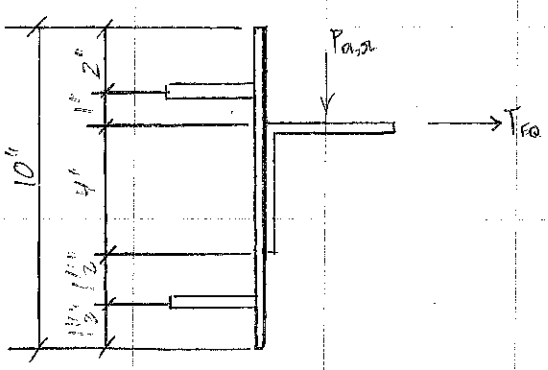
$Q_{UF} = \frac{3.0 \text{ kips}\,(.70)(.75)}{0.90} = 1.75$ kips

(.70 = ϕ concrete; .75 = ϕ seismic; 0.90 = knowledge factor)

Top anchor is okay ✓ [See HILTI]

$kQ_{cl} \geq Q_{UF}$ ✓

Bottom Anchor



$P_{a1} = 1.30$ kips
$P_{s2} = 1.89$ kips
$T_{EQ} = 6.25$ kips

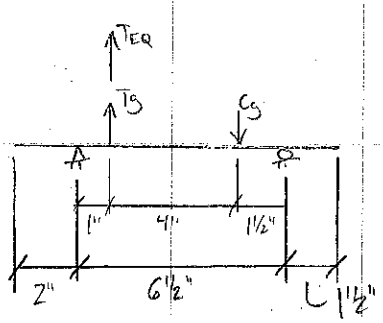
[Converted to Hilti values]

$P_g = (1.30 + 1.89)\,k\,(1.10)(.70)(1/6.9) = 2.73$ kips

$M_g = 2.73\,k\,(2 \text{ in}) = 5.46$ kip-in

$(T/C)_g = \frac{5.46 \text{ k-in}}{4 \text{ in}(.9)} = 1.52$ kips

$T_{EQ} = \frac{6.25 \text{ kips}\,(.70)(.75)}{1.10\,(2.0)(0.9)} = 1.66$ kips



$R_{max} = 2.34$ kips per two bolts

$P_{g\,(2 \text{ rows})} = 2.73 \text{ kips}\,(½) = 1.37$ kips

Bottom anchors are adequate ✓ [See... HILTI]

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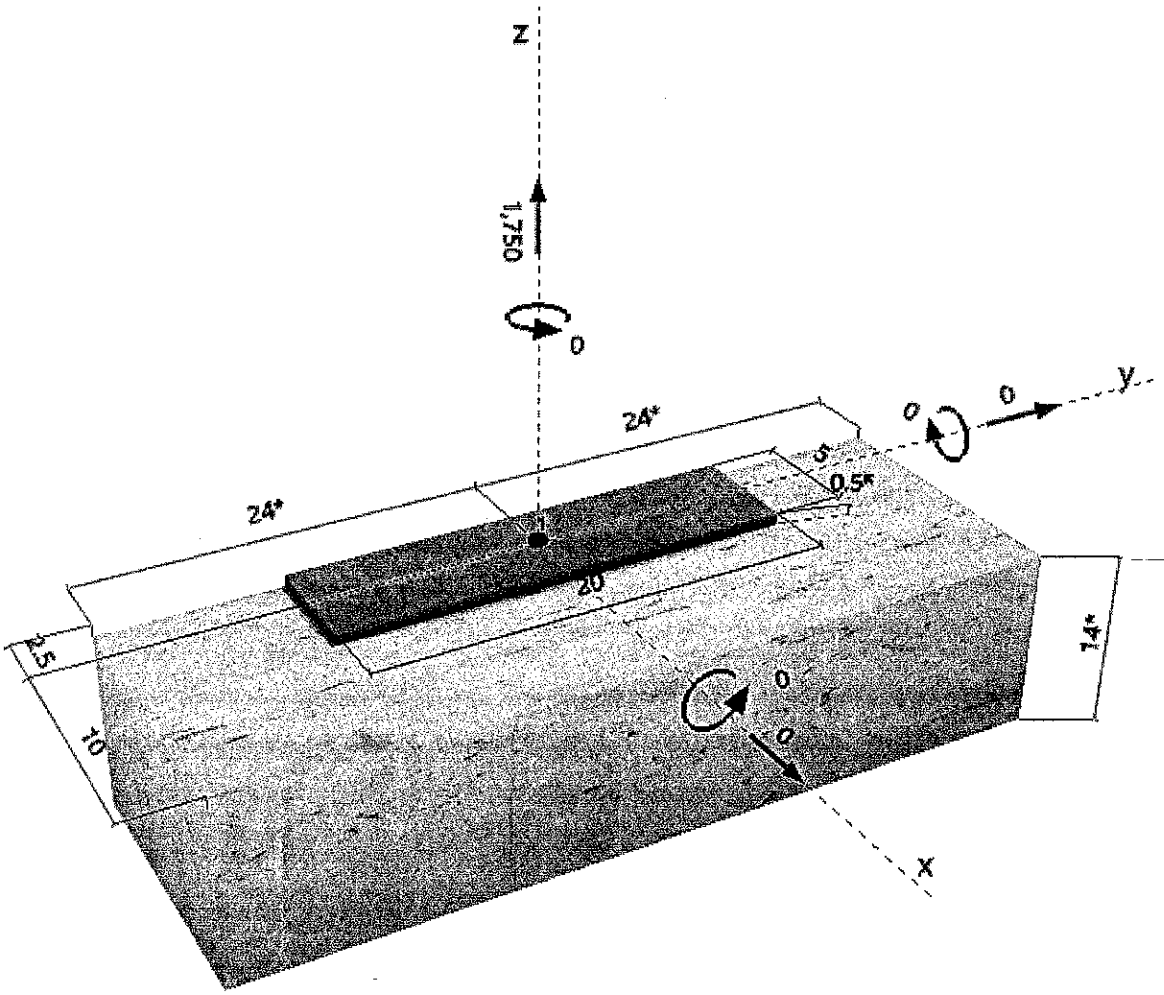
1 Input data



Anchor type and diameter:	**Heavy Hex Head ASTM F 1554 GR. 36 3/4**
Effective embedment depth:	h_{ef} = 12.000 in.
Material:	ASTM F 1554
Proof:	Design method ACI 318-11 / CIP
Stand-off installation:	e_b = 0.000 in. (no stand-off); t = 0.500 in.
Anchor plate:	l_x x l_y x t = 5.000 in. x 20.000 in. x 0.500 in.; (Recommended plate thickness: not calculated
Profile:	no profile
Base material:	cracked concrete, 3000, f_c' = 3,000 psi; h = 14.000 in.
Reinforcement:	tension: condition B, shear: condition B; edge reinforcement: none or < No. 4 bar
Seismic loads (cat. C, D, E, or F)	Tension load: yes (D.3.3.4.3 (d)) Shear load: yes (D.3.3.5.3 (c))

R - The anchor calculation is based on a rigid baseplate assumption.

Geometry [in.] & Loading [lb, in.lb]



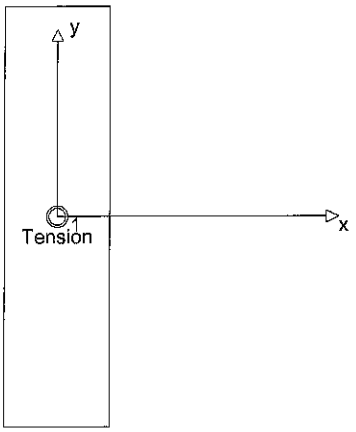
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2 Load case/Resulting anchor forces

Load case: Design loads



Anchor reactions [lb]
Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	1,750	0	0	0

max. concrete compressive strain:	- [‰]
max. concrete compressive stress:	- [psi]
resulting tension force in (x/y)=(0.000/0.000):	1,750 [lb]
resulting compression force in (x/y)=(0.000/0.000):	0 [lb]

Anchor forces are calculated based on the assumption of a rigid baseplate.

3 Tension load

	Load N_{ua} [lb]	Capacity ϕN_n [lb]	Utilization $\beta_N = N_{ua}/\phi N_n$	Status
Steel Strength*	1,750	14,529	13	OK
Pullout Strength*	1,750	11,479	16	OK
Concrete Breakout Strength**	1,750	7,452	24	OK
Concrete Side-Face Blowout, direction x-**	1,750	10,978	16	OK

* anchor having the highest loading **anchor group (anchors in tension)

3.1 Steel Strength

$N_{sa} = A_{se,N} f_{uta}$ ACI 318-11 Eq. (D-2)
$\phi N_{sa} \geq N_{ua}$ ACI 318-11 Table D.4.1.1

Variables

$A_{se,N}$ [in.^{2}]	f_{uta} [psi]
0.33	58,000

Calculations

N_{sa} [lb]
19,372

Results

N_{sa} [lb]	ϕ steel	ϕN_{sa} [lb]	N_{ua} [lb]
19,372	0.750	14,529	1,750

3.2 Pullout Strength

$N_{pN} = \psi_{c,p} N_p$ ACI 318-11 Eq. (D-13)
$N_p = 8 A_{brg} f'_c$ ACI 318-11 Eq. (D-14)
$\phi N_{pN} \geq N_{ua}$ ACI 318-11 Table D.4.1.1

Variables

$\psi_{c,p}$	A_{brg} [in.^{2}]	λ_a	f'_c [psi]
1.000	0.91	1.000	3,000

Calculations

N_p [lb]
21,864

Results

N_{pn} [lb]	ϕ concrete	ϕ seismic	ϕ nonductile	ϕN_{pn} [lb]	N_{ua} [lb]
21,864	0.700	0.750	1.000	11,479	1,750

Input data and results must be checked for agreement with the existing conditions and for plausibility!
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3.3 Concrete Breakout Strength

$N_{cb} = \left(\frac{A_{Nc}}{A_{Nc0}}\right) \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b$ ACI 318-11 Eq. (D-3)

$\phi N_{cb} \geq N_{ua}$ ACI 318-11 Table D.4.1.1

A_{Nc} see ACI 318-11, Part D.5.2.1, Fig. RD.5.2.1(b)

$A_{Nc0} = 9 h_{ef}^2$ ACI 318-11 Eq. (D-5)

$\psi_{ec,N} = \left(\frac{1}{1 + \frac{2 e_N}{3 h_{ef}}}\right) \leq 1.0$ ACI 318-11 Eq. (D-8)

$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}}\right) \leq 1.0$ ACI 318-11 Eq. (D-10)

$\psi_{cp,N} = MAX\left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}}\right) \leq 1.0$ ACI 318-11 Eq. (D-12)

$N_b = 16 \lambda_a \sqrt{f'_c} h_{ef}^{5/3}$ ACI 318-11 Eq. (D-7)

Variables

h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]	$\psi_{c,N}$
12.000	0.000	0.000	2.500	1.000

c_{ac} [in.]	k_c	λ_a	f'_c [psi]
-	16	1.000	3,000

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [lb]
450.00	1,296.00	1.000	1.000	0.742	1.000	55,121

Results

N_{cb} [lb]	$\phi_{concrete}$	$\phi_{seismic}$	$\phi_{nonductile}$	ϕN_{cb} [lb]	N_{ua} [lb]
14,195	0.700	0.750	1.000	7,452	1,750

3.4 Concrete Side-Face Blowout, direction x-

$N_{sb} = 160 \alpha_{corner} c_{a1} \sqrt{A_{brg}} \lambda_a \sqrt{f'_c}$ ACI 318-11 Eq. (D-16)

$\phi N_{sb} \geq N_{ua}$ ACI 318-11 Table (D.4.1.1)

$\alpha_{corner} = \frac{\left(1 + \frac{c_{a2}}{c_{a1}}\right)}{4}$ see ACI 318-11, Part D.5.4.1

Variables

c_{a1} [in.]	c_{a2} [in.]	A_{brg} [in.^{2}]	λ_a	f'_c [psi]	s [in.]
2.500	24.000	0.91	1.000	3,000	-

Calculations

α_{corner}	N_{sb} [lb]
1.000	20,911

Results

N_{sb} [lb]	$\phi_{concrete}$	$\phi_{seismic}$	$\phi_{nonductile}$	ϕN_{sb} [lb]	N_{ua} [lb]
20,911	0.700	0.750	1.000	10,978	1,750

Input data and results must be checked for agreement with the existing conditions and for plausibility!
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4 Shear load

	Load V_{ua} [lb]	Capacity ϕV_n [lb]	Utilization $\beta_V = V_{ua}/\phi V_n$	Status
Steel Strength*	N/A	N/A	N/A	N/A
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength*	N/A	N/A	N/A	N/A
Concrete edge failure in direction **	N/A	N/A	N/A	N/A

* anchor having the highest loading **anchor group (relevant anchors)

5 Warnings

- The anchor design methods in PROFIS Anchor require rigid anchor plates per current regulations (ETAG 001/Annex C, EOTA TR029, etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Anchor calculates the minimum required anchor plate thickness with FEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid base plate assumption is valid is not carried out by PROFIS Anchor. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- Condition A applies when supplementary reinforcement is used. The Φ factor is increased for non-steel Design Strengths except Pullout Strength and Pryout strength. Condition B applies when supplementary reinforcement is not used and for Pullout Strength and Pryout Strength. Refer to your local standard.
- Checking the transfer of loads into the base material and the shear resistance are required in accordance with ACI 318 or the relevant standard!
- An anchor design approach for structures assigned to Seismic Design Category C, D, E or F is given in ACI 318-11 Appendix D, Part D.3.3.4.3 (a) that requires the governing design strength of an anchor or group of anchors be limited by ductile steel failure. If this is NOT the case, the connection design (tension) shall satisfy the provisions of Part D.3.3.4.3 (b), Part D.3.3.4.3 (c), or Part D.3.3.4.3 (d). The connection design (shear) shall satisfy the provisions of Part D.3.3.5.3 (a), Part D.3.3.5.3 (b), or Part D.3.3.5.3 (c).
- Part D.3.3.4.3 (b) / part D.3.3.5.3 (a) require the attachment the anchors are connecting to the structure be designed to undergo ductile yielding at a load level corresponding to anchor forces no greater than the controlling design strength. Part D.3.3.4.3 (c) / part D.3.3.5.3 (b) waive the ductility requirements and require the anchors to be designed for the maximum tension / shear that can be transmitted to the anchors by a non-yielding attachment. Part D.3.3.4.3 (d) / part D.3.3.5.3 (c) waive the ductility requirements and require the design strength of the anchors to equal or exceed the maximum tension / shear obtained from design load combinations that include E, with E increased by ω_0.

Fastening meets the design criteria!

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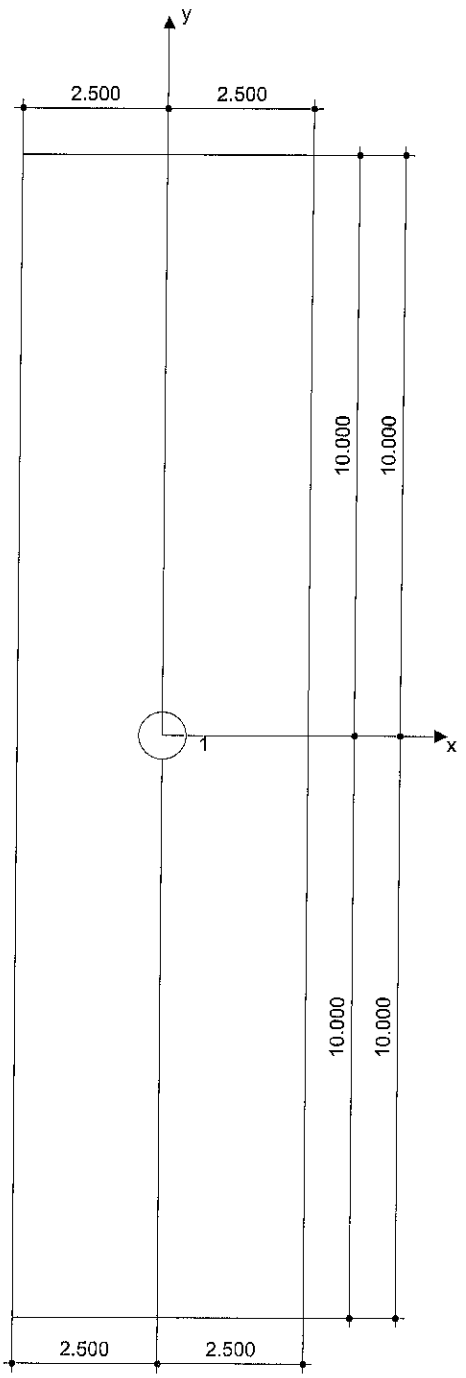
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6 Installation data

Anchor plate, steel: -
Profile: no profile
Hole diameter in the fixture: d_f = 0.813 in.
Plate thickness (input): 0.500 in.
Recommended plate thickness: not calculated

Anchor type and diameter: Heavy Hex Head ASTM F 1554 GR. 36 3/4
Installation torque: -
Hole diameter in the base material: - in.
Hole depth in the base material: 12.000 in.
Minimum thickness of the base material: 13.000 in.



Coordinates Anchor in.

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	0.000	0.000	2.500	10.000	24.000	24.000

Input data and results must be checked for agreement with the existing conditions and for plausibility!
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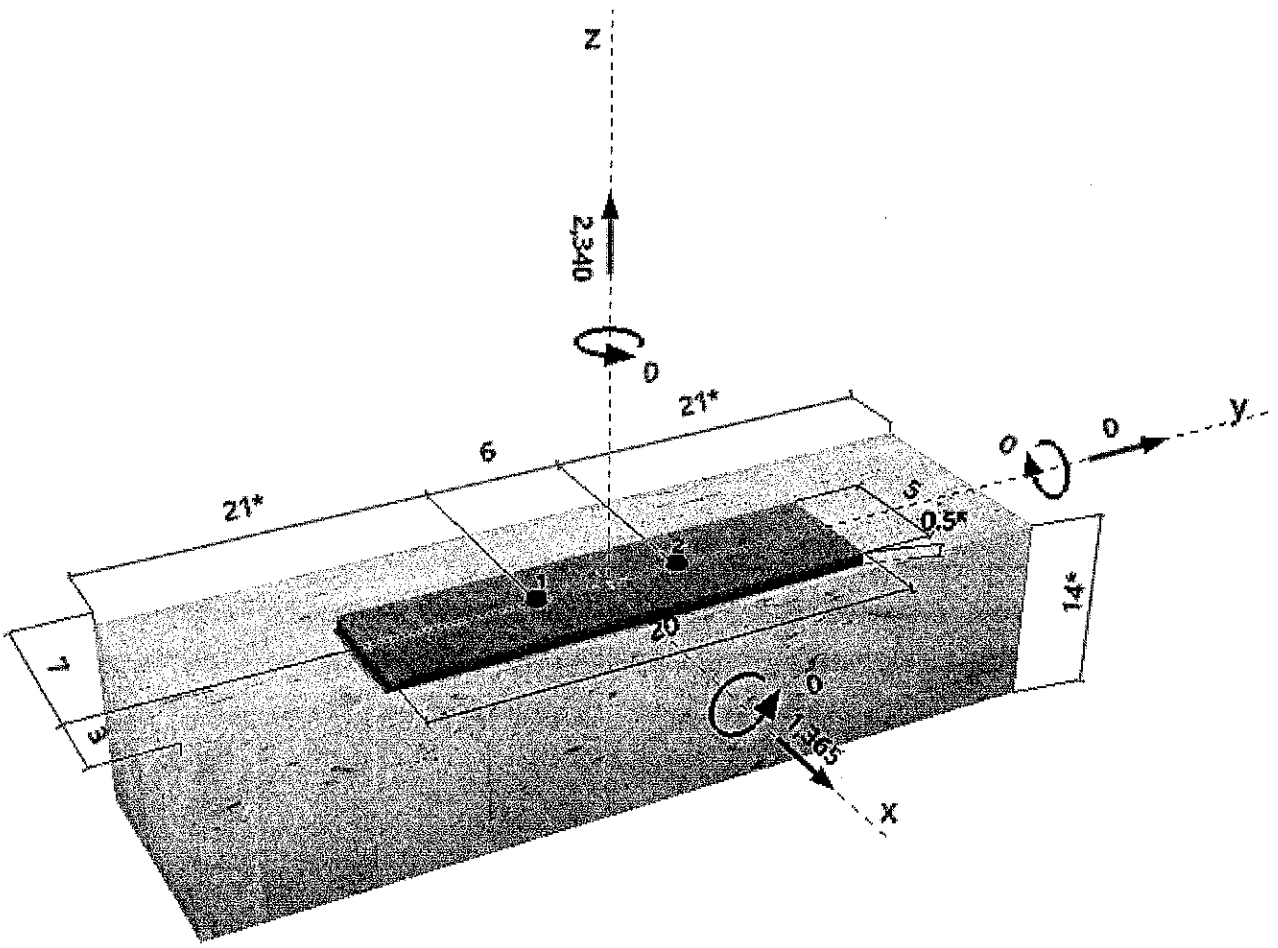
Specifier's comments:

1 Input data

Anchor type and diameter:	**Heavy Hex Head ASTM F 1554 GR. 36 3/4**
Effective embedment depth:	h_{ef} = 8.000 in.
Material:	ASTM F 1554
Proof:	Design method ACI 318-11 / CIP
Stand-off installation:	e_b = 0.000 in. (no stand-off); t = 0.500 in.
Anchor plate:	l_x x l_y x t = 5.000 in. x 20.000 in. x 0.500 in.; (Recommended plate thickness: not calculated
Profile:	no profile
Base material:	cracked concrete, 3000, f_c' = 3,000 psi; h = 14.000 in.
Reinforcement:	tension: condition B, shear: condition B; edge reinforcement: none or < No. 4 bar
Seismic loads (cat. C, D, E, or F)	Tension load: yes (D.3.3.4.3 (d))
	Shear load: yes (D.3.3.5.3 (c))

R - The anchor calculation is based on a rigid baseplate assumption.

Geometry [in.] & Loading [lb, in.lb]

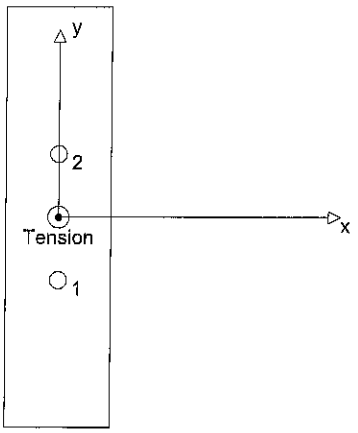


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2 Load case/Resulting anchor forces

Load case: Design loads



Anchor reactions [lb]
Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	1,170	682	682	0
2	1,170	682	682	0

max. concrete compressive strain:	- [‰]
max. concrete compressive stress:	- [psi]
resulting tension force in (x/y)=(0.000/0.000):	2,340 [lb]
resulting compression force in (x/y)=(0.000/0.000):	0 [lb]

Anchor forces are calculated based on the assumption of a rigid baseplate.

3 Tension load

	Load N_{ua} [lb]	Capacity ϕN_n [lb]	Utilization $\beta_N = N_{ua}/\phi N_n$	Status
Steel Strength*	1,170	14,529	9	OK
Pullout Strength*	1,170	11,479	11	OK
Concrete Breakout Strength**	2,340	6,303	38	OK
Concrete Side-Face Blowout, direction x+**	2,340	17,565	14	OK

* anchor having the highest loading **anchor group (anchors in tension)

3.1 Steel Strength

$N_{sa} = A_{se,N} f_{uta}$ ACI 318-11 Eq. (D-2)
$\phi N_{sa} \geq N_{ua}$ ACI 318-11 Table D.4.1.1

Variables

$A_{se,N}$ [in.^{2}]	f_{uta} [psi]
0.33	58,000

Calculations

N_{sa} [lb]
19,372

Results

N_{sa} [lb]	ϕ_{steel}	ϕN_{sa} [lb]	N_{ua} [lb]
19,372	0.750	14,529	1,170

3.2 Pullout Strength

$N_{pN} = \psi_{c,p} N_p$ ACI 318-11 Eq. (D-13)
$N_p = 8 A_{brg} f'_c$ ACI 318-11 Eq. (D-14)
$\phi N_{pN} \geq N_{ua}$ ACI 318-11 Table D.4.1.1

Variables

$\psi_{c,p}$	A_{brg} [in.^{2}]	λ_a	f'_c [psi]
1.000	0.91	1.000	3,000

Calculations

N_p [lb]
21,864

Results

N_{pn} [lb]	$\phi_{concrete}$	$\phi_{seismic}$	$\phi_{nonductile}$	ϕN_{pn} [lb]	N_{ua} [lb]
21,864	0.700	0.750	1.000	11,479	1,170

Input data and results must be checked for agreement with the existing conditions and for plausibility!
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3.3 Concrete Breakout Strength

$N_{cbg} = \left(\frac{A_{Nc}}{A_{Nc0}}\right) \psi_{ec,N} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b$ ACI 318-11 Eq. (D-4)

$\phi N_{cbg} \geq N_{ua}$ ACI 318-11 Table D.4.1.1

A_{Nc} see ACI 318-11, Part D.5.2.1, Fig. RD.5.2.1(b)

$A_{Nc0} = 9 h_{ef}^2$ ACI 318-11 Eq. (D-5)

$\psi_{ec,N} = \left(\frac{1}{1 + \frac{2 e_N}{3 h_{ef}}}\right) \leq 1.0$ ACI 318-11 Eq. (D-8)

$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}}\right) \leq 1.0$ ACI 318-11 Eq. (D-10)

$\psi_{cp,N} = MAX\left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}}\right) \leq 1.0$ ACI 318-11 Eq. (D-12)

$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5}$ ACI 318-11 Eq. (D-6)

Variables

h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]	$\psi_{c,N}$
8.000	0.000	0.000	3.000	1.000

c_{ac} [in.]	k_c	λ_a	f'_c [psi]
-	24	1.000	3,000

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [lb]
300.00	576.00	1.000	1.000	0.775	1.000	29,745

Results

N_{cbg} [lb]	ϕ concrete	ϕ seismic	ϕ nonductile	ϕN_{cbg} [lb]	N_{ua} [lb]
12,006	0.700	0.750	1.000	6,303	2,340

3.4 Concrete Side-Face Blowout, direction x+

$N_{sb} = 160 c_{a1} \sqrt{A_{brg}} \lambda_a \sqrt{f'_c}$ ACI 318-11 Eq. (D-16)

$N_{sbg} = \alpha_{group} N_{sb}$ ACI 318-11 Eq. (D-17)

$\phi N_{sbg} \geq N_{ua}$ ACI 318-11 Table (D.4.1.1)

$\alpha_{group} = \left(1 + \frac{s}{6 c_{a1}}\right)$ see ACI 318-11, Part D.5.4.2 Eq. (D-17)

Variables

c_{a1} [in.]	c_{a2} [in.]	A_{brg} [in.^{2}]	λ_a	f'_c [psi]	s [in.]
3.000	21.000	0.91	1.000	3,000	6.000

Calculations

α_{group}	N_{sb} [lb]
1.333	25,093

Results

N_{sbg} [lb]	ϕ concrete	ϕ seismic	ϕ nonductile	ϕN_{sbg} [lb]	$N_{ua,edge}$ [lb]
33,458	0.700	0.750	1.000	17,565	2,340

Input data and results must be checked for agreement with the existing conditions and for plausibility!
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4 Shear load

	Load V_{ua} [lb]	Capacity ϕV_n [lb]	Utilization $\beta_V = V_{ua}/\phi V_n$	Status
Steel Strength*	682	7,555	10	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength**	1,365	16,809	9	OK
Concrete edge failure in direction x+**	1,365	2,988	46	OK

* anchor having the highest loading **anchor group (relevant anchors)

4.1 Steel Strength

$V_{sa} = 0.6\, A_{se,V}\, f_{uta}$ ACI 318-11 Eq. (D-29)
$\phi\, V_{steel} \geq V_{ua}$ ACI 318-11 Table D.4.1.1

Variables

$A_{se,V}$ [in.^{2}]	f_{uta} [psi]
0.33	58,000

Calculations

V_{sa} [lb]
11,623

Results

V_{sa} [lb]	ϕ_{steel}	$\phi\, V_{sa}$ [lb]	V_{ua} [lb]
11,623	0.650	7,555	682

4.2 Pryout Strength

$V_{cpg} = k_{cp}\left[\left(\frac{A_{Nc}}{A_{Nc0}}\right)\Psi_{ec,N}\,\Psi_{ed,N}\,\Psi_{c,N}\,\Psi_{cp,N}\,N_b\right]$ ACI 318-11 Eq. (D-41)

$\phi\, V_{cpg} \geq V_{ua}$ ACI 318-11 Table D.4.1.1

A_{Nc} see ACI 318-11, Part D.5.2.1, Fig. RD.5.2.1(b)

$A_{Nc0} = 9\, h_{ef}^2$ ACI 318-11 Eq. (D-5)

$\Psi_{ec,N} = \left(\frac{1}{1+\frac{2\,e'_N}{3\,h_{ef}}}\right) \leq 1.0$ ACI 318-11 Eq. (D-8)

$\Psi_{ed,N} = 0.7 + 0.3\left(\frac{c_{a,min}}{1.5h_{ef}}\right) \leq 1.0$ ACI 318-11 Eq. (D-10)

$\Psi_{cp,N} = \mathrm{MAX}\left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5h_{ef}}{c_{ac}}\right) \leq 1.0$ ACI 318-11 Eq. (D-12)

$N_b = k_c\,\lambda_a\sqrt{f'_c}\,h_{ef}^{1.5}$ ACI 318-11 Eq. (D-6)

Variables

k_{cp}	h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]
2	8.000	0.000	0.000	3.000

$\Psi_{c,N}$	c_{ac} [in.]	k_c	λ_a	f'_c [psi]
1.000	-	24	1.000	3,000

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\Psi_{ec1,N}$	$\Psi_{ec2,N}$	$\Psi_{ed,N}$	$\Psi_{cp,N}$	N_b [lb]
300.00	576.00	1.000	1.000	0.775	1.000	29,745

Results

V_{cpg} [lb]	$\phi_{concrete}$	$\phi_{seismic}$	$\phi_{nonductile}$	$\phi\, V_{cpg}$ [lb]	V_{ua} [lb]
24,012	0.700	1.000	1.000	16,809	1,365

Input data and results must be checked for agreement with the existing conditions and for plausibility!
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4.3 Concrete edge failure in direction x+

$V_{cbg} = \left(\frac{A_{Vc}}{A_{Vc0}}\right) \psi_{ec,V} \psi_{ed,V} \psi_{c,V} \psi_{h,V} \psi_{parallel,V} V_b$ ACI 318-11 Eq. (D-31)

$\phi V_{cbg} \geq V_{ua}$ ACI 318-11 Table D.4.1.1

A_{Vc} see ACI 318-11, Part D.6.2.1, Fig. RD.6.2.1(b)

$A_{Vc0} = 4.5 c_{a1}^2$ ACI 318-11 Eq. (D-32)

$\psi_{ec,V} = \left(\frac{1}{1 + \frac{2e_v}{3c_{a1}}}\right) \leq 1.0$ ACI 318-11 Eq. (D-36)

$\psi_{ed,V} = 0.7 + 0.3\left(\frac{c_{a2}}{1.5c_{a1}}\right) \leq 1.0$ ACI 318-11 Eq. (D-38)

$\psi_{h,V} = \sqrt{\frac{1.5c_{a1}}{h_a}} \geq 1.0$ ACI 318-11 Eq. (D-39)

$V_b = 9 \lambda_a \sqrt{f'_c} c_{a1}^{1.5}$ ACI 318-11 Eq. (D-34)

Variables

c_{a1} [in.]	c_{a2} [in.]	e_{cV} [in.]	$\psi_{c,V}$	h_a [in.]
3.000	21.000	0.000	1.000	14.000

l_a [in.]	λ_a	d_a [in.]	f'_c [psi]	$\psi_{parallel,V}$
6.000	1.000	0.750	3,000	1.000

Calculations

A_{Vc} [in.^{2}]	A_{Vc0} [in.^{2}]	$\psi_{ec,V}$	$\psi_{ed,V}$	$\psi_{h,V}$	V_b [lb]
67.50	40.50	1.000	1.000	1.000	2,561

Results

V_{cbg} [lb]	$\phi_{concrete}$	$\phi_{seismic}$	$\phi_{nonductile}$	ϕV_{cbg} [lb]	V_{ua} [lb]
4,269	0.700	1.000	1.000	2,988	1,365

5 Combined tension and shear loads

β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
0.371	0.457	5/3	47	OK

$\beta_{NV} = \beta_N^\zeta + \beta_V^\zeta <= 1$

6 Warnings

- The anchor design methods in PROFIS Anchor require rigid anchor plates per current regulations (ETAG 001/Annex C, EOTA TR029, etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Anchor calculates the minimum required anchor plate thickness with FEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid base plate assumption is valid is not carried out by PROFIS Anchor. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- Condition A applies when supplementary reinforcement is used. The Φ factor is increased for non-steel Design Strengths except Pullout Strength and Pryout strength. Condition B applies when supplementary reinforcement is not used and for Pullout Strength and Pryout Strength. Refer to your local standard.
- Checking the transfer of loads into the base material and the shear resistance are required in accordance with ACI 318 or the relevant standard!
- An anchor design approach for structures assigned to Seismic Design Category C, D, E or F is given in ACI 318-11 Appendix D, Part D.3.3.4.3 (a) that requires the governing design strength of an anchor or group of anchors be limited by ductile steel failure. If this is NOT the case, the connection design (tension) shall satisfy the provisions of Part D.3.3.4.3 (b), Part D.3.3.4.3 (c), or Part D.3.3.4.3 (d). The connection design (shear) shall satisfy the provisions of Part D.3.3.5.3 (a), Part D.3.3.5.3 (b), or Part D.3.3.5.3 (c).
- Part D.3.3.4.3 (b) / part D.3.3.5.3 (a) require the attachment the anchors are connecting to the structure be designed to undergo ductile yielding at a load level corresponding to anchor forces no greater than the controlling design strength. Part D.3.3.4.3 (c) / part D.3.3.5.3 (b) waive the ductility requirements and require the anchors to be designed for the maximum tension / shear that can be transmitted to the anchors by a non-yielding attachment. Part D.3.3.4.3 (d) / part D.3.3.5.3 (c) waive the ductility requirements and require the design strength of the anchors to equal or exceed the maximum tension / shear obtained from design load combinations that include E, with E increased by ω_0.

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Fastening meets the design criteria!

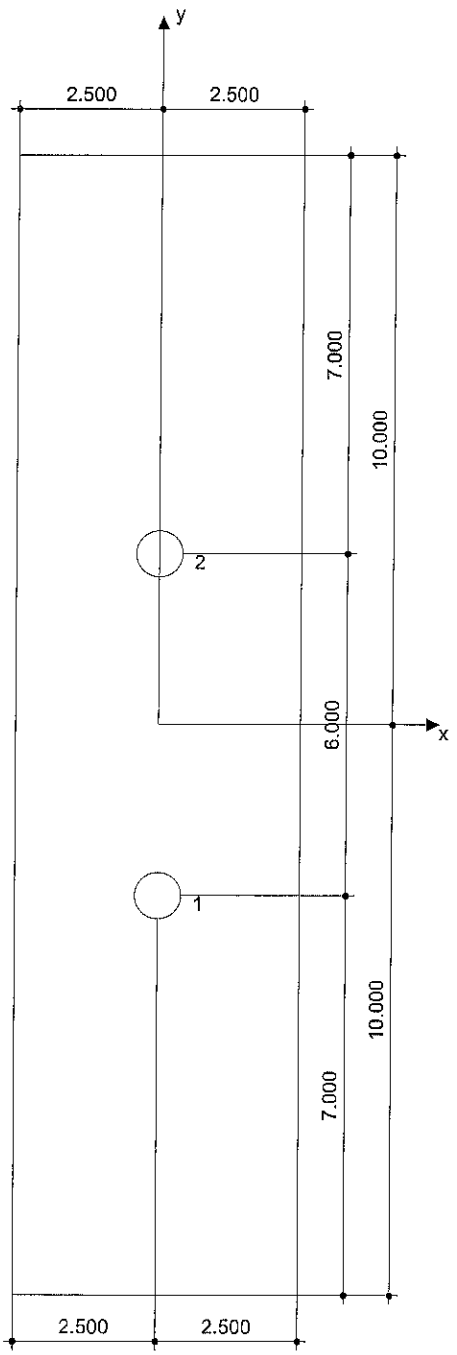
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7 Installation data

Anchor plate, steel: -
Profile: no profile
Hole diameter in the fixture: d_f = 0.813 in.
Plate thickness (input): 0.500 in.
Recommended plate thickness: not calculated

Anchor type and diameter: Heavy Hex Head ASTM F 1554 GR. 36 3/4
Installation torque: -
Hole diameter in the base material: - in.
Hole depth in the base material: 8.000 in.
Minimum thickness of the base material: 9.000 in.



Coordinates Anchor in.

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	0.000	-3.000	7.000	3.000	21.000	27.000
2	0.000	3.000	7.000	3.000	27.000	21.000

Input data and results must be checked for agreement with the existing conditions and for plausibility!
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Project		Job No.
Client	Location	18518
Designed by CA	Date	Page of
Sheet description WEST GYM WALL OUT-OF-PLANE ANCHORAGE		

ABHT STRUCTURAL ENGINEERS

CHECK OUT OF PLANE ANCHORAGE OF EXTERIOR CONC. WALL ON GRID 1 AT GYM. ASSUME THAT OUT-OF-PLANE LOAD GOES THRU PLATE GIRDER CONN.

MAX SPACING = $(18.5' + 17.83')/2 = 18.17'$

$T = 1.56^k/_{ft} \times 18.17' = 28.3^k$

CHECK GIRDER WEB TO SEAT PLATE WELD:

$L_{weld} = 10" \times 2 = 20"$

$Q_{cl} = 7.42^k/_{in} \times 20" = 148.4^k$

$KQ_{cl} = 0.9 \times 148.4^k = 133.5^k$

$$Q_{uf} = \frac{Q_E}{C_1 C_2 J} = \frac{28.3^k}{(1.1)(2.0)} = 12.8^k$$

$KQ_{cl} > Q_{uf} = 133.5^k > 12.8^k$ ok ✓

$DCR = 12.8^k/_{133.5^k} = 0.096 < 1.0$ ok

CHECK (2) 1¼" ϕ BOLTS:

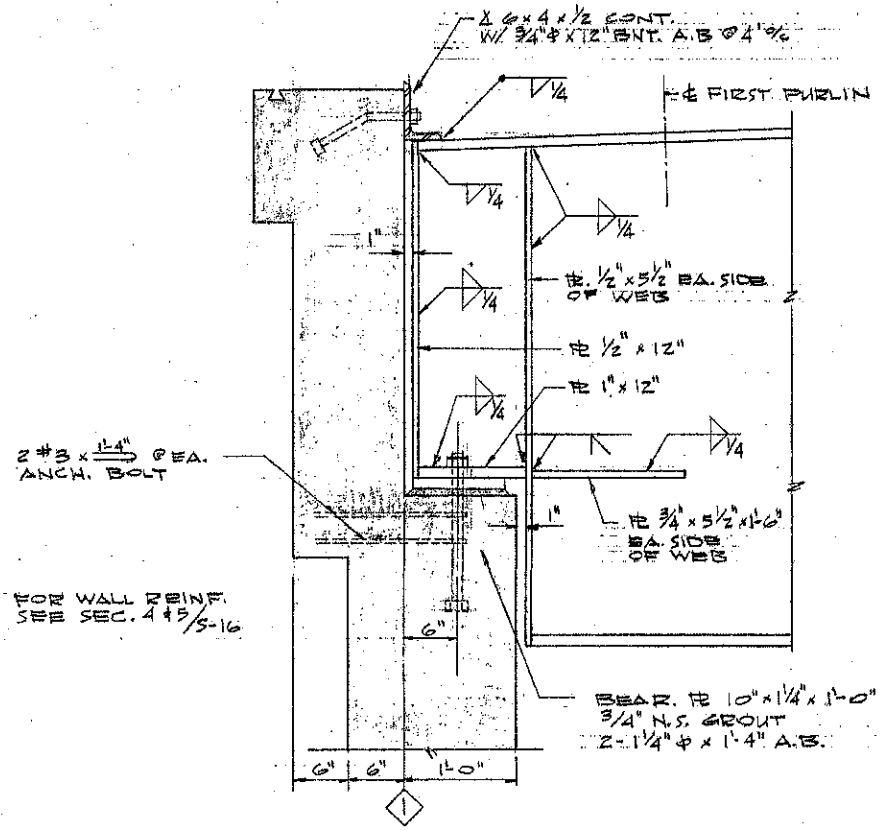
$R_n = F_{nv} A_b = 24 ksi \times 0.89 in^2 = 21.36^k$ (min root area)

$\phi = 1.0$

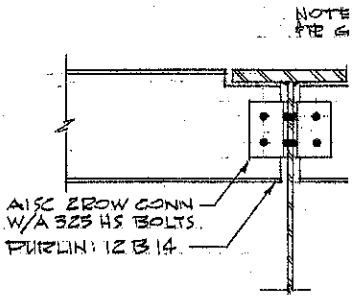
$Q_{cl} = 21.36^k/_{bolt}$

$KQ_{cl} = 0.9 \times 21.36^k/_{bolt} \times 2 \text{ bolts} = 38.4^k > 12.8^k$ ok

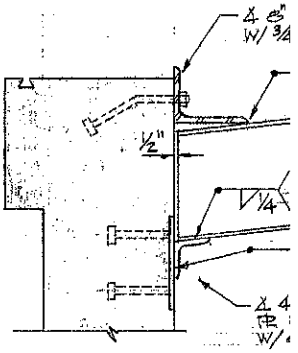
$DCR = 12.8/38.4 = 0.33 < 1.0$ ok



DETAIL 2 S-18
1"=1'-0"



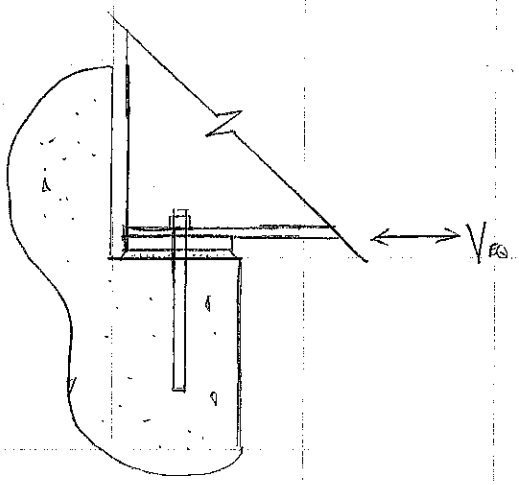
DETA



DETAIL
1"=1'-0"

Project	PCC Health Tech		Job No. 18518
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Designed by AJK	Date 03/11/2019	Page	of
Sheet description			

ABHT STRUCTURAL ENGINEERS



$V_{EQ} = 28.3$ kips

| Factor for use in HILTI |

$V_u = \frac{28.3 \text{ kips } (1.10)(1.75)}{.90(1.10)(2.0)} = 7.50$ kips

[Check grade 36 1¼" ϕ bolts w/ 16" conc. embed] ⇒ (E) Anchors are over-stressed

Only 3% ✓ OK

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Specifier's comments:

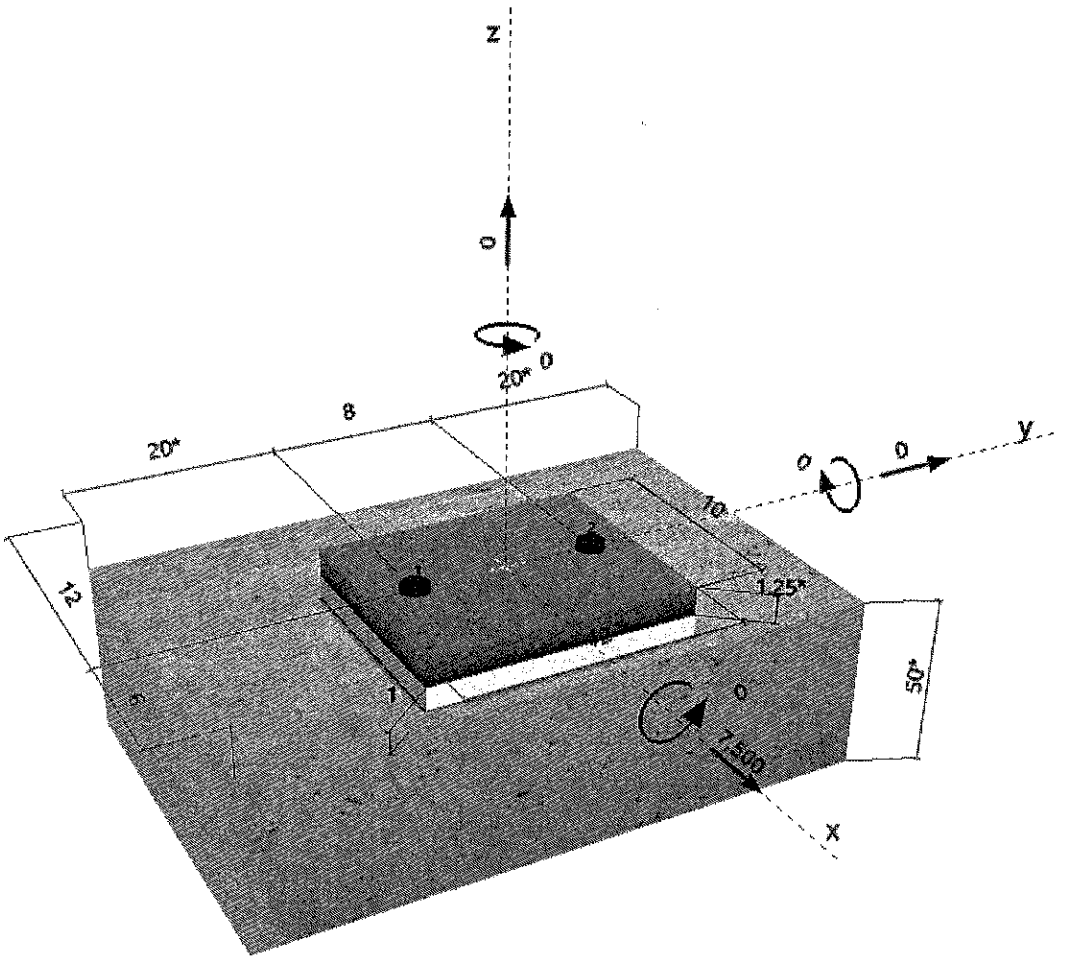
1 Input data



Anchor type and diameter:	**Hex Head ASTM F 1554 GR. 36 1 1/4**
Effective embedment depth:	h_{ef} = 16.000 in.
Material:	ASTM F 1554
Proof:	Design method ACI 318-11 / CIP
Stand-off installation:	without clamping (anchor); restraint level (anchor plate): 2.00; e_b = 1.000 in.; t = 1.250 in.
	Hilti Grout: CB-G EG, epoxy, $f_{c,Grout}$ = 14,939 psi
Anchor plate:	l_x x l_y x t = 10.000 in. x 12.000 in. x 1.250 in.; (Recommended plate thickness: not calculated
Profile:	no profile
Base material:	cracked concrete, 3000, f_c' = 3,000 psi; h = 50.000 in.
Reinforcement:	tension: condition B, shear: condition B;
	edge reinforcement: none or < No. 4 bar
Seismic loads (cat. C, D, E, or F)	Tension load: yes (D.3.3.4.3 (d))
	Shear load: yes (D.3.3.5.3 (c))

R - The anchor calculation is based on a rigid baseplate assumption.

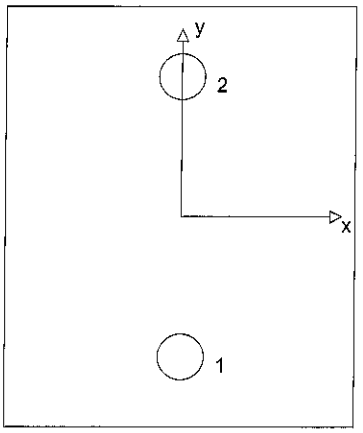
Geometry [in.] & Loading [lb, in.lb]



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2 Load case/Resulting anchor forces

Load case: Design loads



Anchor reactions [lb]
Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	0	3,750	3,750	0
2	0	3,750	3,750	0

max. concrete compressive strain:	- [‰]
max. concrete compressive stress:	- [psi]
resulting tension force in (x/y)=(0.000/0.000):	0 [lb]
resulting compression force in (x/y)=(0.000/0.000):	0 [lb]

Anchor forces are calculated based on the assumption of a rigid baseplate.

3 Tension load

	Load N_{ua} [lb]	Capacity ϕN_n [lb]	Utilization $\beta_N = N_{ua}/\phi N_n$	Status
Steel Strength*	N/A	N/A	N/A	N/A
Pullout Strength*	N/A	N/A	N/A	N/A
Concrete Breakout Strength**	N/A	N/A	N/A	N/A
Concrete Side-Face Blowout, direction **	N/A	N/A	N/A	N/A

* anchor having the highest loading **anchor group (anchors in tension)

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4 Shear load

	Load V_{ua} [lb]	Capacity ϕV_n [lb]	Utilization $\beta_V = V_{ua}/\phi V_n$	Status
Steel Strength*	3,750	17,535	22	OK
Steel failure (with lever arm)*	3,750	5,189	73	OK
Pryout Strength**	7,500	39,240	20	OK
Concrete edge failure in direction x+**	7,500	7,325	103	not recommended

* anchor having the highest loading **anchor group (relevant anchors)

4.1 Steel Strength

$V_{sa} = 0.6\, A_{se,V}\, f_{uta}$ ACI 318-11 Eq. (D-29)
$\phi\, V_{steel} \geq V_{ua}$ ACI 318-11 Table D.4.1.1

Variables

$A_{se,V}$ [in.^{2}]	f_{uta} [psi]
0.97	58,000

Calculations

V_{sa} [lb]
33,721

Results

V_{sa} [lb]	ϕ_{steel}	ϕ_{eb}	$\phi\, V_{sa}$ [lb]	V_{ua} [lb]
33,721	0.650	0.800	17,535	3,750

4.2 Steel failure (with lever arm)

$V_s^M = \frac{\alpha_M \cdot M_s}{L_b}$ bending equation for stand-off

$M_s = M_s^0 \left(1 - \frac{N_{ua}}{\phi N_{sa}}\right)$ resultant flexural resistance of anchor

$M_s^0 = (1.2)\,(S)\,(f_{u,min})$ characteristic flexural resistance of anchor

$\left(1 - \frac{N_{ua}}{\phi N_{sa}}\right)$ reduction for tensile force acting simultaneously with a shear force on the anchor

$S = \frac{\pi (d)^3}{32}$ elastic section modulus of anchor bolt at concrete surface

$L_b = z + (n)(d_0)$ internal lever arm adjusted for spalling of the surface concrete

$\phi V_s^M \geq V_{ua}$ ACI 318-11 Table D.4.1.1

Variables

α_M	$f_{u,min}$ [psi]	N_{ua} [lb]	ϕN_{sa} [lb]	z [in.]	n	d_0 [in.]
2.00	58,000	0	42,151	1.625	0.500	1.250

Calculations

M_s^0 [in.lb]	$\left(1 - \frac{N_{ua}}{\phi N_{sa}}\right)$	M_s [in.lb]	L_b [in.]
8,981.110	1.000	8,981.110	2.250

Results

V_s^M [lb]	ϕ_{steel}	$\phi\, V_s^M$ [lb]	V_{ua} [lb]
7,983	0.650	5,189	3,750

Input data and results must be checked for agreement with the existing conditions and for plausibility!
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4.3 Pryout Strength

$V_{cpg} = k_{cp}\left[\left(\frac{A_{Nc}}{A_{Nc0}}\right)\psi_{ec,N}\,\psi_{ed,N}\,\psi_{c,N}\,\psi_{cp,N}\,N_b\right]$ ACI 318-11 Eq. (D-41)

$\phi\,V_{cpg} \geq V_{ua}$ ACI 318-11 Table D.4.1.1

A_{Nc} see ACI 318-11, Part D.5.2.1, Fig. RD.5.2.1(b)

$A_{Nc0} = 9\,h_{ef}^2$ ACI 318-11 Eq. (D-5)

$\psi_{ec,N} = \left(\frac{1}{1+\frac{2\,e_N}{3\,h_{ef}}}\right) \leq 1.0$ ACI 318-11 Eq. (D-8)

$\psi_{ed,N} = 0.7 + 0.3\left(\frac{c_{a,min}}{1.5h_{ef}}\right) \leq 1.0$ ACI 318-11 Eq. (D-10)

$\psi_{cp,N} = MAX\left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5h_{ef}}{c_{ac}}\right) \leq 1.0$ ACI 318-11 Eq. (D-12)

$N_b = 16\,\lambda_a\sqrt{f'_c}\,h_{ef}^{5/3}$ ACI 318-11 Eq. (D-7)

Variables

k_{cp}	h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]
2	13.333	0.000	0.000	6.000

$\psi_{c,N}$	c_{ac} [in.]	k_c	λ_a	f'_c [psi]
1.000	-	16	1.000	3,000

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [lb]
864.00	1,600.00	1.000	1.000	0.790	1.000	65,702

Results

V_{cpg} [lb]	$\phi_{concrete}$	$\phi_{seismic}$	$\phi_{nonductile}$	$\phi\,V_{cpg}$ [lb]	V_{ua} [lb]
56,057	0.700	1.000	1.000	39,240	7,500

4.4 Concrete edge failure in direction x+

$V_{cbg} = \left(\frac{A_{Vc}}{A_{Vc0}}\right)\psi_{ec,V}\,\psi_{ed,V}\,\psi_{c,V}\,\psi_{h,V}\,\psi_{parallel,V}\,V_b$ ACI 318-11 Eq. (D-31)

$\phi\,V_{cbg} \geq V_{ua}$ ACI 318-11 Table D.4.1.1

A_{Vc} see ACI 318-11, Part D.6.2.1, Fig. RD.6.2.1(b)

$A_{Vc0} = 4.5\,c_{a1}^2$ ACI 318-11 Eq. (D-32)

$\psi_{ec,V} = \left(\frac{1}{1+\frac{2e_v}{3c_{a1}}}\right) \leq 1.0$ ACI 318-11 Eq. (D-36)

$\psi_{ed,V} = 0.7 + 0.3\left(\frac{c_{a2}}{1.5c_{a1}}\right) \leq 1.0$ ACI 318-11 Eq. (D-38)

$\psi_{h,V} = \sqrt{\frac{1.5c_{a1}}{h_a}} \geq 1.0$ ACI 318-11 Eq. (D-39)

$V_b = 9\,\lambda_a\sqrt{f'_c}\,c_{a1}^{1.5}$ ACI 318-11 Eq. (D-34)

Variables

c_{a1} [in.]	c_{a2} [in.]	e_{cV} [in.]	$\psi_{c,V}$	h_a [in.]
6.000	20.000	0.000	1.000	50.000

l_e [in.]	λ_a	d_a [in.]	f'_c [psi]	$\psi_{parallel,V}$
10.000	1.000	1.250	3,000	1.000

Calculations

A_{Vc} [in.^{2}]	A_{Vc0} [in.^{2}]	$\psi_{ec,V}$	$\psi_{ed,V}$	$\psi_{h,V}$	V_b [lb]
234.00	162.00	1.000	1.000	1.000	7,245

Results

V_{cbg} [lb]	$\phi_{concrete}$	$\phi_{seismic}$	$\phi_{nonductile}$	$\phi\,V_{cbg}$ [lb]	V_{ua} [lb]
10,465	0.700	1.000	1.000	7,325	7,500

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5 Warnings

- The anchor design methods in PROFIS Anchor require rigid anchor plates per current regulations (ETAG 001/Annex C, EOTA TR029, etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Anchor calculates the minimum required anchor plate thickness with FEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid base plate assumption is valid is not carried out by PROFIS Anchor. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- Condition A applies when supplementary reinforcement is used. The Φ factor is increased for non-steel Design Strengths except Pullout Strength and Pryout strength. Condition B applies when supplementary reinforcement is not used and for Pullout Strength and Pryout Strength. Refer to your local standard.
- ACI 318 does not specifically address anchor bending when a stand-off condition exists. PROFIS Anchor calculates a shear load corresponding to anchor bending when stand-off exists and includes the results as a shear Design Strength!
- Checking the transfer of loads into the base material and the shear resistance are required in accordance with ACI 318 or the relevant standard!
- An anchor design approach for structures assigned to Seismic Design Category C, D, E or F is given in ACI 318-11 Appendix D, Part D.3.3.4.3 (a) that requires the governing design strength of an anchor or group of anchors be limited by ductile steel failure. If this is NOT the case, the connection design (tension) shall satisfy the provisions of Part D.3.3.4.3 (b), Part D.3.3.4.3 (c), or Part D.3.3.4.3 (d). The connection design (shear) shall satisfy the provisions of Part D.3.3.5.3 (a), Part D.3.3.5.3 (b), or Part D.3.3.5.3 (c).
- Part D.3.3.4.3 (b) / part D.3.3.5.3 (a) require the attachment the anchors are connecting to the structure be designed to undergo ductile yielding at a load level corresponding to anchor forces no greater than the controlling design strength. Part D.3.3.4.3 (c) / part D.3.3.5.3 (b) waive the ductility requirements and require the anchors to be designed for the maximum tension / shear that can be transmitted to the anchors by a non-yielding attachment. Part D.3.3.4.3 (d) / part D.3.3.5.3 (c) waive the ductility requirements and require the design strength of the anchors to equal or exceed the maximum tension / shear obtained from design load combinations that include E, with E increased by ω_0.

Fastening does not meet the design criteria!

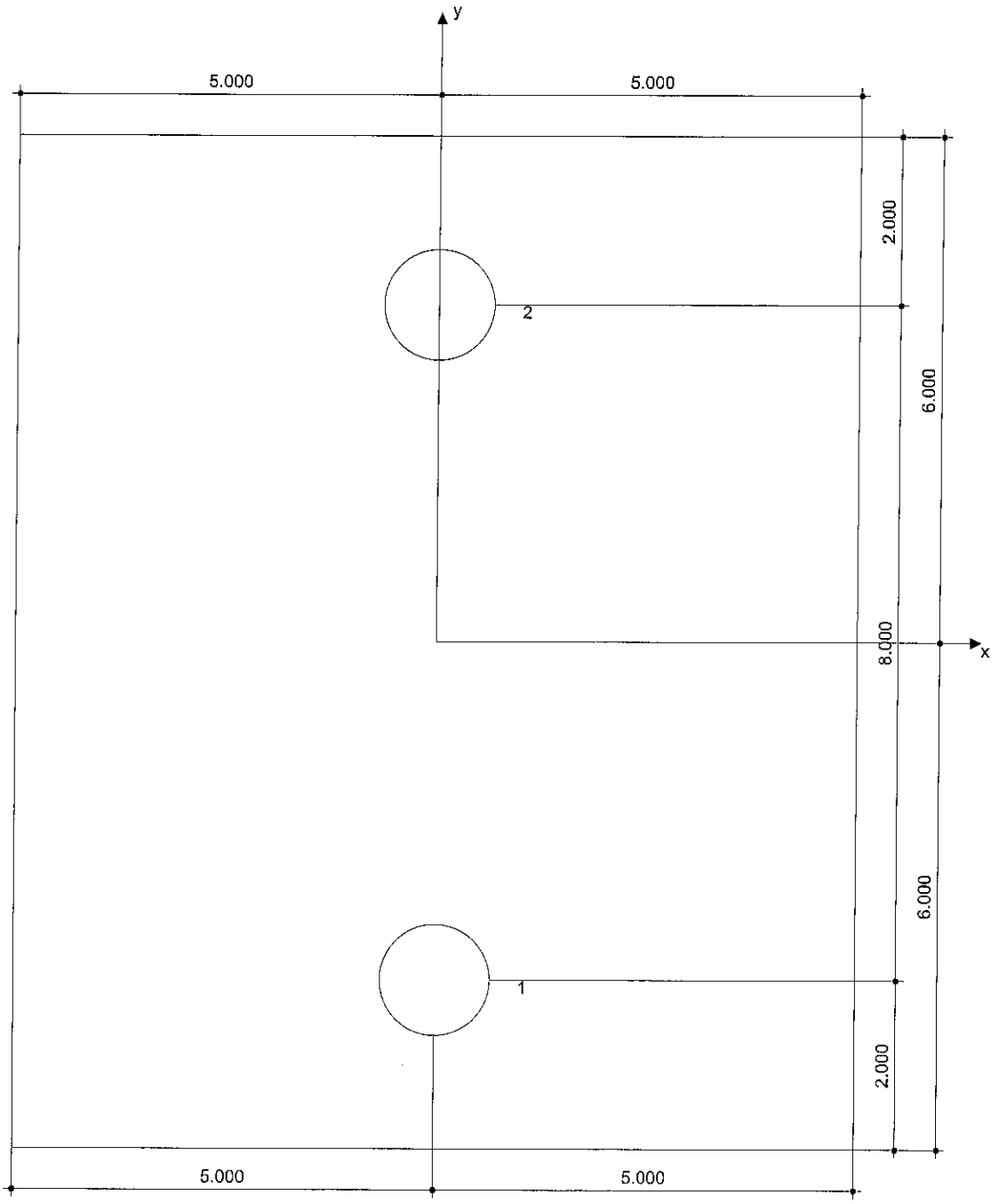
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Company:		Page:	6
Specifier:		Project:	Girder Anchors
Address:		Sub-Project I Pos. No.:	
Phone I Fax:	|	Date:	3/11/2019
E-Mail:			

6 Installation data

Anchor plate, steel: -
Profile: no profile
Hole diameter in the fixture: d_f = 1.313 in.
Plate thickness (input): 1.250 in.
Recommended plate thickness: not calculated

Anchor type and diameter: Hex Head ASTM F 1554 GR. 36 1 1/4
Installation torque: -
Hole diameter in the base material: - in.
Hole depth in the base material: 16.000 in.
Minimum thickness of the base material: 17.344 in.



Coordinates Anchor in.

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	0.000	-4.000	12.000	6.000	20.000	28.000
2	0.000	4.000	12.000	6.000	28.000	20.000

Input data and results must be checked for agreement with the existing conditions and for plausibility!
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Company:		Page:	7
Specifier:		Project:	Girder Anchors
Address:		Sub-Project I Pos. No.:	
Phone I Fax:		Date:	3/11/2019
E-Mail:			

7 Remarks; Your Cooperation Duties

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- You must take all necessary and reasonable steps to prevent or limit damage caused by the Software. In particular, you must arrange for the regular backup of programs and data and, if applicable, carry out the updates of the Software offered by Hilti on a regular basis. If you do not use the AutoUpdate function of the Software, you must ensure that you are using the current and thus up-to-date version of the Software in each case by carrying out manual updates via the Hilti Website. Hilti will not be liable for consequences, such as the recovery of lost or damaged data or programs, arising from a culpable breach of duty by you.

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ATTENTION:

Fortis Construction
1705 SW Taylor St STE 200
Portland, OR 97205

100% Design Submittal
REV002
(For Review)

PORTLAND COMMUNITY COLLEGE
SYLVANIA HT WEST RENOVATION

Portland, OR

CONDON · JOHNSON & ASSOCIATES, INC.
CONTRACTORS AND ENGINEERS

MICROPILE DESIGN SUBMITTAL

July 2, 2024

Jessee Bogenoff, P.E.
jbogenoff@condon-johnson.com

☒ NO EXCEPTIONS TAKEN ☐ REVISE AND RESUBMIT
☐ MAKE CORRECTIONS NOTED ☐ REVIEW NOT REQUIRED

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the submittal during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all Work in a safe and satisfactory manner.

kpff
KPFF Consulting Engineers
Date 07/09/2024
By Nick Saari, SE

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MEMORANDUM

Condon-Johnson and Associates, Inc. (CJA) is pleased to present this revision to the micropile design submittal package for Fortis Construction. This design submittal has been prepared in accordance with our Notice to Proceed, dated February 26, 2024. The revisions in this package addresses the added micropiles to the structural drawings, dated May 24, 2024. The proposed micropiles have two separate cased lengths based on the depth to basalt, and are denoted as Type 1 and Type 2 respectively. Type 1 micropiles require 65-ft of 7-in x 0.408-in casing with a bond length of 15-ft and Type 2 micropiles require 30-ft of 7-in x 0.408-in casing with a bond length of 15ft. Both are to support the foundation of the proposed building renovation at the Portland Community College HT West Building.

We appreciate the opportunity to work with you on this project. If you have any questions regarding this submittal, please contact us by phone: (503)-545-9755, or via email: jbogenoff@condon-johnson.com.



Jessee Bogenoff, P.E.

☒ NO EXCEPTIONS TAKEN ☐ REVISE AND RESUBMIT
☐ MAKE CORRECTIONS NOTED ☐ REVIEW NOT REQUIRED

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the submittal during this review do not relieve the contractor from compliance with the requirements of the plans and specifications. Review of a specific item shall not include review of an assembly of which the item is a component. The Contractor is responsible for: dimensions to be confirmed and correlated at the jobsite; information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of all other trades and performing all Work in a safe and satisfactory manner.

kpff

KPFF Consulting Engineers
Date 07/09/2024
By Nick Saari, SE

USE OF PROPOSALS AND DESIGNS

Any design or proposal prepared and furnished by Condon-Johnson and Associates, Inc. (CJA) including any Value-Engineering proposal or proposal for alternative designs, means and/or methods (collectively "Designs") have been prepared based upon and in anticipation of CJA performing the work called for in such Designs. As such, the Designs are specifically tailored for CJA's purposes and have been prepared for exclusive use by CJA. Owner and/or Contractor shall not use or control the Designs without the prior written consent of an authorized representative of CJA, and then only as an absolutely necessary to perform such permitted use. The Designs are subject to protection under the Copyright Act of 1976 and Architectural Works Copyright Protection Act of 1990. Owner and/or Contractor shall not copy, reproduce, emulate or model the Designs or disclose, publish, or disseminate the Designs to any third parties without the prior written approval of an authorized representative of CJA. CJA is and shall continue to be the sole owner of the Designs.

INDEMNITY FOR IMPROPER USE

Owner and/or Contractor shall not permit other contractors to use the Designs on this Project or use the Designs on other projects without the prior written approval of an authorized representative of CJA. CJA makes no warranties or guarantees as to the suitability of the Designs for use by others or for other applications or projects. Any such use shall be at the Owners and/or Contractor's sole risk, and the Owner and/or Contractor shall indemnify, defend, insure, and hold harmless CJA, its agents, consultants officers, directors and employees from and against any and all claims, damages, losses, costs and expenses, including but not limited to attorney's fees, costs, and expenses, arising out of or resulting from use of the Designs by any party other than CJA.

1. PROJECT AND SITE DESCRIPTION

The Portland Community College Sylvania Campus is located at 12000 SW 49th Ave., Portland, OR. The project site is gently sloped to the west with existing campus buildings on the site. The proposed micropiles will be installed inside the existing pool building.

Seismic retrofits of the HT Building have been proposed to meet current seismic design standards. It is proposed that 23-ea permanent micropiles be constructed to support the foundation of the HT Building.

Based on CJA's review of boreholes from the referenced geotechnical reports, the subsurface conditions generally consists of medium stiff to stiff clayey silt (ML/ MH) underlain by basalt of hardness varying from R0 to R5. Groundwater is anticipated to be below the depth of interest for the micropile scope of work. These findings are consistent with older borings and CPTs advanced on the site.

Our design relies on the referenced documents in Section 2. Should any of the information or recommendations contained in these documents change, we should be immediately informed to assess the implications of those changes on our design.

2. PROJECT DOCUMENTS

- PCC SY-HT Building West Side Renovation Drawings by KPFF, dated 12/15/23;
- PCC SY-HT Building West Side Renovation Drawings Sheets S1.00C and S5.01 by KPFF, dated 02/23/24 and revised 05/24/24;
- PCC SY-HT Building West Side Renovation Specification ''Section 316223 Micropiles'', dated 12/15/23;
- Geotechnical Investigation: Portland Community College Sylvania Campus HT Building. Submitted by Central Geotechnical Services, LLC, dated 01/11/2021.
- Geotechnical Investigation: Portland Community College Sylvania Campus HT West Building. Submitted by Central Geotechnical Services, LLC, dated 05/17/2024.

3. CODE AND REFERENCE DOCUMENTS

- Publication No. FHWA-NHI-05-039, Micropile Design and Construction Guidelines Implementation Manual;
- PTI DC35.1-14 Recommendations for Prestressed Rock and Soil Anchors;
- Oregon Structural Specialty Code 2022 (OSSC), Chapter 18.

4. DESIGN CRITERIA

The micropile design is based on the following criteria provided by KPFF:

- Axial Allowable Stress Design (ASD) load = 100-kips in compression only;
- No lateral ASD loads;
- No shear or uplift requirements;

- Design load must account for up to 3-in of mislocation (OSSC CH18 allows for the compression load to be increased by 1.1 x DL, to 110-kips);
- Allowable Vertical Deflection at Design Load: 0.5-in;

5. MICROPILE DESIGN SUMMARY

Based on our review of available geotechnical data, Type 1 micropiles will be permanently cased a minimum of 65-ft below the existing grade and Type 2 micropiles will be permanently cased a minimum of 30-ft below the existing grade. The micropiles will be into the R0-R5 basalt with a minimum bond length of 15-ft.

The micropile capacity will be demonstrated by verification load testing one of the production micropiles to twice the design load (2.0DL) in tension, which is 200-kips.

CJA proposes a 7-in O.D. x 0.408-in wall API N80 steel casing for the cased zone. Micropiles will be reinforced with a #14 all-thread reinforcing bar with a minimum steel yield stress (F_y) of 75ksi. The verification test production micropile will be installed with a #18 all-thread reinforcing bar with a minimum F_y of 75ksi.

The connection between the top of the micropile and foundation shall be designed by others and detailed in the foundation drawings.

6. DESIGN CALCULATIONS AND PLANS

The micropile design submittal is summarized on the three (3) half-size 11''x17'' plan sheets bound separately from this design narrative in Appendix A. The number and title for each sheet are indicated below:

- MP-01: General Information
- MP-02: Micropile Details
- MP-03: Micropile Layout

Sheet MP-01 contains notes that address the design assumptions, reference data, a description of the installation sequence, material and testing requirements. Sheet MP-02 contains the typical elevation and cross-section details for the micropiles. MP-03 shows the micropiles in plan view.

The micropile design calculations are presented in the subsequent section. The calculations address the allowable axial capacity, bond zone length and vertical deflection. A detailed table of all calculation are presented in Appendix B.

6.1 Selection of Casing and Threadbar on Tested Micropiles

The proposed micropiles will use 7-in x 0.408-in API N-80 micropile casing for the cased length and be reinforced with a full length Gr. 75 (min. Fy 75ksi) all-thread bar. PTI DC35.1-14 states that for grade 75 bar, the maximum test load should not exceed 90% of the specified ultimate tensile strength of the steel.

If bar couplers are required, CJA shall provide couplers that develop the ultimate tensile strength of the bar without evidence of any failure.

Appendix B contain the micropile design spreadsheet calculations. These calculations verify that the micropile reinforcement can handle the maximum test load. The following is an example to verify that a #18 Gr. 75 rebar can handle the maximum performance test load (200%).

$$Q_{all} = 0.9 \times F_y \times A_{bar} \quad (1)$$
$$P_{PT} = 2 \times DL \quad (2)$$

Where Q_{all} is the maximum allowable test load the rebar can handle; F_y is the rebar yield stress; A_{bar} is the cross-sectional rebar area; P_{PT} is the maximum performance test load; and DL is the design load. Therefore, the maximum test load the rebar can handle is:

$$Q_{all} = 0.9 \times 75\ ksi \times 4\ in^2 = 270\ kips$$

$$P_{PT} = 2 \times 100\ kips = 200\ kips$$

As a result, the #18 Gr. 75 rebar can handle the maximum performance test load.

6.2 Structural Check of Micropile Design

Allowable Compression Load Cased Length

To evaluate the allowable compression load for the cased length of the micropile, Equation 5-1 from FHWA NHI-05-039 was used.

$$A_{grout} = 0.25 \times \pi \times {D_I}^2 - A_{bar} \quad (3)$$
$$P_{c-allowable} = 0.4 \times f'_{c-grout} \times A_{grout} + 0.47 \times f_{y-steel} \times \left(A_{bar} + A_{casing}\right) \quad (4)$$

Where $f'_{c-grout}$ is the 28-day design compressive strength; A_{grout} is the cross-sectional area of the grouted section; D_I is the casing inner diameter; $f_{y-steel}$ is the minimum steel yield stress between the casing and the rebar; A_{bar} is the cross-sectional area of the rebar; and A_{casing} is the cross-sectional area of the casing. An example of the allowable compression load is presented below:

$$A_{grout} = 0.25 \times \pi \times (6.18\ in)^2 - 2.25\ in^2 = 27.79\ in^2$$

$$P_{c-allowable} = 0.4 \times 4\ ksi \times 27.79\ in^2 + 0.47 \times 75ksi \times (2.25\ in^2 + 8.45\ in^2) = 423\ kips$$

As a result, the allowable compression load in the cased length is greater than the increased design compression load of 110-kips.

Allowable Compression Load Uncased Length

To evaluate the allowable compression load for the uncased length of the micropile, Equation 5-1 from FHWA NHI-05-039 was used.

$$A_{grout} = 0.25 \times \pi \times {D_g}^2 - A_{bar} \quad (5)$$

$$P_{c-allowable} = 0.4 \times f'_{c-grout} \times A_{grout} + 0.47 \times f_{y-steel} \times A_{bar} \quad (6)$$

Where $f'_{c-grout}$ is the 28-day design compressive strength; A_{grout} is the cross-sectional area of the grouted section; D_g is the grouted bond zone nominal diameter; $f_{y-steel}$ is the minimum steel yield stress between the casing and the rebar; and A_{bar} is the cross-sectional area of the rebar. An example of the allowable compression load is presented below:

$$A_{grout} = 0.25 \times \pi \times (6\ in)^2 - 2.25\ in^2 = 26.02\ in^2$$

$$P_{c-allowable} = 0.4 \times 4\ ksi \times 26.02\ in^2 + 0.47 \times 75 ksi \times 2.25\ in^2 = 121\ kips$$

As a result, the allowable compression load in the uncased length is greater than the increased design compression load of 110-kips.

6.3 Required Bond Length

The micropile bond zone will be predominately within the R0-R5 basalt. Utilizing recommendations from the geotechnical report, we expect to achieve an ultimate bond strength of approximately 59-psi, which translates to an allowable bond capacity of 6.7-kip/ft with a factor of safety of 2.0.

$$f = \frac{\pi \times D \times \tau_u}{FS} \quad (7)$$

$$L_b = \frac{Q_r}{f} \quad (8)$$

Where f is the bond capacity; L_b is the bond length for bond zone material; Q_r is maximum design load; FS is the factor of safety; D is the grouted bond zone nominal diameter; τ_u is the average ultimate bond strength for bond zone material. Therefore, the bond capacity is calculated as:

$$f = \frac{\pi \times 6\ in \times 59\ psi}{2} \times \frac{1\ kip}{1000\ lbs} \times \frac{12in}{1ft} = 6.7\ kips/ft$$

$$L_b = \frac{100\ kips}{6.7\ kip/ft} \sim 15\ ft$$

Therefore, the design is reasonably conservative based on our experience in similar materials in the region.

6.4 Computed Displacements at Service Level Loads

The micropile axial deflection of interest is calculated by considering the theoretical elastic elongation of the unbonded length plus half the bond length of the threadbar, and the stiffness of the casing itself, as per Section 5.10.3 of the FHWA manual.

$$A_{grout} = 0.25 \times \pi \times {D_I}^2 - A_{bar} \quad (9)$$

$$E_{grout} = 57 \times \sqrt{f_c'} \quad (10)$$

$$\Delta = \frac{P \times L_{CL}}{(A_{bar} + A_{casing}) \times E_{steel} + 0.5 \times A_{grout} \times E_{grout}} + \frac{P \times 0.5 L_{BL}}{(A_{bar}) \times E_{steel}} \quad (11)$$

Where Δ is the axial deflection; P is the maximum design load; L_{CL} is the length of the casing; A_{bar} is the cross-sectional area of the rebar; A_{casing} is the cross-sectional area of the casing; E_{steel} is the young's modulus of steel; $f'_{c-grout}$ is the 28-day design compressive strength; D_I is the casing inner diameter; A_{grout} is the cross-sectional area of grouted section; E_{grout} is the young's modulus of grout; and L_{BL} is the bond length. The maximum axial deflection was calculated as follows:

$$A_{grout} = 0.25 \times \pi \times (6.18\ in)^2 - 2.25\ in^2 = 27.79\ in^2$$

$$E_{grout} = 57 \times \sqrt{4000\ psi} = 3605\ psi$$

$$\Delta = \frac{100\ kips \times 65\ ft}{(2.25\ in^2 + 8.45\ in^2)\ x\ 30{,}000\ ksi + 0.5\ x\ 27.79\ in^2\ x\ 3{,}605\ ksi} + \frac{100\ kips\ x\ 0.5\ x\ 15\ ft}{(2.25\ in^2)\ x\ 30{,}000\ ksi}$$

$$\Delta = 0.026\ ft \times \frac{12\ in}{1\ ft} = 0.35\ in$$

In addition, these calculations are displayed in Appendix B for the design load of 100-kip. The computed deflections range from 0.25-in to 0.35-in at service level loading. Both vertical deflection results are below the tolerance specified in Section 4. Since the micropiles will be tested in the field at existing surface elevation, the elongation between the micropile design finished top plate and the point of measurement will need to be deducted from the elongation observed.

7. CLOSURE

Based on the design performed herein, CJA trusts that the micropile design submittal is in accordance with the project specifications and design criteria.

Our design was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the civil engineering profession currently practicing under similar conditions and in the same locality. No warranty is made nor implied.

Sincerely,

Jessee Bogenoff, P.E.

Condon-Johnson & Associates

APENDIX A

Micropile Drawings

PROJECT REFERENCE DATA:

1. GEOTECHNICAL INVESTIGATION: PORTLAND COMMUNITY COLLEGE SYLVANIA CAMPUS HEALTH TECHNOLOGY (HT) WEST BUILDING, SUBMITTED BY CENTRAL GEOTECHNICAL SERVICES, LLC, DATED 05/17/2024;
2. PCC SY-HT BUILDING WEST SIDE RENOVATION DRAWINGS SHEETS S1.00C AND S5.01 BY KPFF, DATED 02/23/24 AND REVISED 05/24/24;
3. PCC SY-HT BUILDING WEST SIDE RENOVATION DRAWINGS BY KPFF, DATED 12/15/23;
4. PCC SY-HT BUILDING WEST SIDE RENOVATION SPECIFICATION "SECTION 31 62 23 MICROPILES", DATED 12/15/23;
5. GEOTECHNICAL INVESTIGATION: PORTLAND COMMUNITY COLLEGE SYLVANIA CAMPUS HEALTH TECHNOLOGY (HT) BUILDING, SUBMITTED BY CENTRAL GEOTECHNICAL SERVICES, LLC, DATED 1/11/2021.

BUILDING CODES AND DESIGN MANUAL:

1. PUBLICATION NO. FHWA-NHI-05-039, MICROPILE DESIGN AND CONSTRUCTION GUIDELINES IMPLEMENTATION MANUAL;
2. PTI DC35.1-14 RECOMMENDATIONS FOR PRESTRESSED ROCK AND SOIL ANCHORS;
3. OREGON STRUCTURAL SPECIALTY CODE 2022, CHAPTER 18.

DESIGN CRITERIA:

1. ALL MICROPILES ARE DESIGNED FOR 100 KIPS IN COMPRESSION ONLY;
2. ALL MICROPILES ARE DESIGNED FOR AN ALLOWABLE VERTICAL DEFLECTION OF 0.5-IN AT DESIGN LOAD;
3. ONE (1) PRODUCTION MICROPILE SHALL BE VERIFICATION TESTED IN TENSION TO 2 TIMES THE MAXIMUM DESIGN LOAD; 200 KIPS.
4. TWO (2) PRODUCTION MICROPILE SHALL BE PROOF TESTED IN TENSION TO 1.5 TIMES THE MAXIMUM DESIGN LOAD; 150 KIPS.
5. IF DIFFERENT INSTALLATION PROCEDURES OR SOIL CONDITIONS ARE OBSERVED, AND ADDITIONAL LOAD TEST DATA IS DEEMED NECESSARY, MICROPILES MAY BE TESTED FOLLWOING THE PROOF TESTING PROCEDURE DESCRIBED ON THIS SHEET.

DESIGN CALCULATIONS:

1. THE MICROPILE DESIGN CALCULATIONS ARE CONTAINED IN THE REPORT TITLED: "PORTLAND COMMUNITY COLLEGE SYLVANIA HT WEST RENOVATION, MICROPILE DESIGN SUBMITTAL";

INSTALLATION PROCEDURE:

1. BEFORE ADVANCEMENT, THE DRILL STRING SHALL BE CENTERED ON THE MICROPILE LOCATION AND CHECKED FOR VERTICALITY USING ANGLE FINDERS AND BOX LEVELS;
2. WITH THE HYDRAULIC DRILL RIG IN PLACE, THE MICROPILE SHALL BE ADVANCED TO TIP ELEVATION USING AN OUTER CASING AND INNER DRILL STEEL. PRESSURIZED AIR WILL ACT AS A FLUSHING MEDIUM TO FLUSH CUTTINGS OUT OF THE MICROPILE;
3. THE CASING SHALL BE ADVANCED TO A DEPTH REQUIRED TO PREVENT CAVING CONDITIONS OR THE MINIMUM CASED LENGTH CALLED OUT IN THE DESIGN, WHICHEVER IS GREATER. THE MICROPILE MAY BE ADVANCED USING OPEN HOLE METHODS WHERE GROUND CONDITIONS ALLOW.
4. ONCE THE TIP ELEVATION HAS BEEN REACHED, THE INNER DRILL STEEL WILL BE REMOVED AND THE CENTRAL REINFORCING BAR SHALL THEN BE PLACED INTO THE DRILL HOLE AND SHALL BE CENTERED USING PLASTIC CENTRALIZERS;
5. ONCE THE BAR HAS BEEN FULLY INSERTED, THE DRILL HOLE SHALL BE TREMIE-FILLED WITH NEAT CEMENT GROUT. IN ORDER TO ENSURE FULL MICROPIIILE DEPTH, THE TREMIE TUBE SHALL BE MEASURED WHILE ADVANCING DOWN THE DRILL HOLE. GROUT PRESSURE REQUIRED TO TRANSPORT GROUT THROUGH THE TREMIE TUBE TYPICALLY RANGES FROM 5 TO 35 PSI. AFTER TREMIE GROUTING IS COMPLETE, THE DRILL HOLE SHALL BE OVERFLOWED WITH GROUT AND VISUALLY INSPECTED FOR GROUT CONSISTENCY TO ENSURE QUALITY;
6. ONCE THE GROUT HAS REACHED THE REQUIRED COMPRESSIVE STRENGTH, TESTING SHALL BE PERFORMED (IF REQUIRED).

MICROPILE THREADBAR AND CENTRALIZERS:

1. THREADBAR SHALL CONFORM TO ASTM A615, GRADE 75. THREADBAR COUPLERS SHALL DEVELOP THE ULTIMATE TENSILE STRENGTH OF THE BAR AS CERTIFIED BY THE MANUFACTURER;
2. MICROPILE THREADBARS SHALL HAVE CENTRALIZERS PLACED EVERY 10 FEET (MAX) ALONG THE PILE AND A MAXIMUM OF 5 FEET FROM EITHER END OF THE PILE;
3. CENTRALIZERS SHALL BE CONSTRUCTED OF SCHEDULE 40 PVC, SECURELY ATTACHED TO THE THREADBAR OR PVC SHEATH, SIZED TO POSITION THE BAR WITHIN 1 INCH OF THE CENTER OF THE DRILL HOLE, SIZED TO ALLOW TREMIE PIPE INSERTION TO THE BOTTOM OF THE DRILL HOLE AND SIZED TO ALLOW GROUT TO FLOW FREELY UP THE DRILL HOLE.

MICROPILE CASING:

1. THE MICROPILE CASING SHALL BE IN ACCORDANCE WITH API N80, WITH A MINIMUM YIELD STRENGTH OF 80-KSI. THREADED CASING JOINTS SHALL PROVIDE THE MINIMUM STRENGTH OF THE REQUIRED MICROPILE DESIGN STRENGTH.

MICROPILE GROUT:

1. ALL GROUT SHALL BE A NEAT CEMENT OR SAND-CEMENT MIXTURE WITH A MINIMUM 3-DAY COMPRESSIVE STRENGTH OF 1500 PSI AND A MINIMUM 28-DAY COMPRESSIVE STRENTH OF 4000 PSI PER ASTM C109 / ASSHTO T106. TYPE IL PORTLAND CEMENT CONFORMING TO ASTM C150 / AASHTO M85 SHALL BE USED FOR MICROPILE GROUT;
2. NEAT CEMENT SHALL CONSIST OF A MIXTURE OF CEMENT AND WATER WITH A WATER CEMENT RATIO OF APPROXIMATELY 0.45. THIS IS COMMONLY ATTAINED WITH 5 GALLONS OF WATER PER 94 LB SACK OF CEMENT;
3. CEMENT SHALL BE ADEQUATELY STORED TO PREVENT MOISTURE DEGRADATION AND PARTIAL HYDRATION. CEMENT THAT HAS BECOME CAKED OR LUMP SHALL NOT BE USED. FINE AGGREGATE SHALL CONFORM TO ASTM C33 / AASHTO M6

TESTING - GENERAL:

1. ALL MICROPILE TESTS SHALL BE PERFORMED IN TENSION ONLY.
2. TESTING EQUIPMENT SHALL INCLUDE TWO DIAL GAUGES, A DIAL GAUGE SUPPORT, JACK AND PRESSURE GAUGE, A PUMP, AND A REACTION FRAME, AS DESCRIBED BELOW;
3. A MINIMUM OF TWO DIAL GAUGES WITH 0.001-IN ACCURACY SHALL BE USED TO MONITOR MOVEMENT AT THE TOP OF THE MICROPILE. THE MICROPILE TOP MOVEMENT SHALL BE THE AVERAGE OF THE TWO READINGS. DIAL GAUGES SHALL BE ATTACHED TO INDEPENDENT REFERENCE BEAMS.
4. THE JACK AND PRESSURE GAUGE SHALL BE CALIBRATED BY AN INDEPENDENT TESTING LABORATORY AS A UNIT. THE PRESSURE GAUGE SHALL BE GRADUATED IN 100 PSI INCREMENTS OR LESS AND SHALL HAVE A RANGE NOT EXCEEDING TWICE THE ANTICIPATED MAXIMUM PRESSURE DURING TESTING UNLESS APPROVED OTHERWISE BY THE ENGINEER. THE RAM TRAVEL OF THE JACK SHALL BE SUFFICIENT TO ENABLE THE TEST TO BE PREFORMED WITHOUT RE-SETTING THE JACK;
5. THE STRESSING EQUIPMENT SHALL BE PLACED OVER THE MICROPILE IN SUCH A MANNER THAT THE JACK, BEARING PLATES, AND STRESSING ANCHORAGE ARE IN ALIGNMENT. THE JACK SHALL BE POSITIONED AT THE BEGINNING OF THE TEST SUCH THAT UNLOADING AND REPOSITIONING OF THE JACK DURING THE TEST WILL NOT BE REQUIRED.

PROOF TESTING PROCEDURE:

1. TWO (2) MICROPILES SHALL BE PROOF TESTED AND UNLOADED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE.
2. THE ALIGNMENT LOAD (AL) SHOULD BE THE MINIMUM LOAD REQUIRED TO ALIGN THE TESTING APPARATUS AND SHALL NOT EXCEED 0.05DL. THE DIAL GAUGES SHOULD BE ZEROED AFTER THE ALIGNMENT LOAD IS APPLIED;

LOAD	HOLD TIME
AL	1 MINUTES
0.25DL	1 MINUTES
0.50DL	1 MINUTES
0.75DL	1 MINUTES
1.00DL	1 MINUTES
1.25DL	1 MINUTES
1.50DL	10 OR 60 MINUTES (CREEP TEST)
AL	1 MINUTES

3. EACH LOAD INCREMENT SHALL BE HELD FOR AT LEAST 1 MINUTE FOR PROOF TESTING. THE TEST MICROPILE SHALL BE MONITORED FOR CREEP FOR 10 MINUTES AT THE 1.50 DL INCREMENT. MOVEMENT DURING THE CREEP PORTION OF THE TEST SHALL BE MEASURED AND RECORDED AT 1, 2, 3, 4, 5, 6, AND 10 MINUTES. IF MOVEMENT AT THE END OF THE MICROPILE BETWEEN 1 AND 10 MINUTES OF LOAD HOLDING EXCEEDS 0.04 INCHES, THE TEST HOLD TIME SHALL BE EXTENDED FOR AN AN ADDITIONAL 50 MINUTES. THUS, THE TOTAL MOVEMENT SHALL BE MEASURED AT 15, 20, 25, 30, 45, AND 60 MINUTES;
4. A TEST SHALL BE CONSIDERED ACCEPTABLE WHEN (1) A CREEP RATE LESS THAN 0.04 INCHES PER LOG CYCLE OF TIME BETWEEN THE 1 AND 10 MINUTE READINGS ARE OBSERVED DURING CREEP TESTING AND THE RATE IS LINEAR OR DECREASING THROUGHOUT THE CREEP TEST LOAD HOLD PERIOD OR 0.08 INCHES PER LOG CYCLE OF TIME BETWEEN THE 10 AND 60 MINUTE. AND (2) A PULLOUT FAILURE DOES NOT OCCUR DURING TESTING. PULLOUT FAILURE IS DEFINED AS THE LOAD AT WHICH ATTEMPTS TO INCREASE THE TEST LOAD SIMPLY RESULT IN CONTINUED PULLOUT MOVEMENT OF THE MICROPILE.

VERIFICATION TEST LOADING PROCEDURE:

1. ONE (1) MICROPILE SHALL BE VERIFICATION TESTED AND UNLOADED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE.
2. THE ALIGNMENT LOAD (AL) SHOULD BE THE MINIMUM LOAD REQUIRED TO ALIGN THE TESTING APPARATUS AND SHALL NOT EXCEED 0.05DL. THE DIAL GAUGES SHOULD BE ZEROED AFTER THE ALIGNMENT LOAD IS APPLIED.

LOAD	HOLD TIME
AL	1 MINUTES
0.15DL	1 MINUTES
0.30DL	1 MINUTES
0.45DL	1 MINUTES
AL	1 MINUTES
0.15DL	1 MINUTES
0.45DL	1 MINUTES
0.60DL	1 MINUTES
0.75DL	1 MINUTES
0.90DL	1 MINUTES
1.00DL	1 MINUTES
1.15DL	1 MINUTES
1.30DL	10-60 MINUTES (CREEP TEST LOAD HOLD)
1.45DL	1 MINUTES
AL	1 MINUTES
0.15DL	1 MINUTES
1.45DL	1 MINUTES
1.60DL	1 MINUTES
1.75DL	1 MINUTES
1.90DL	1 MINUTES
2.00DL	1 MINUTES
AL	

3. EACH LOAD INCREMENT SHALL BE HELD FOR AT LEAST 1 MINUTE FOR PROOF TESTING. THE TEST MICROPILE SHALL BE MONITORED FOR CREEP FOR 10 MINUTES AT THE 1.30 DL INCREMENT. MOVEMENT DURING THE CREEP PORTION OF THE TEST SHALL BE MEASURED AND RECORDED AT 1, 2, 3, 4, 5, 6, AND 10 MINUTES. IF MOVEMENT AT THE END OF THE MICROPILE BETWEEN 1 AND 10 MINUTES OF LOAD HOLDING EXCEEDS 0.04 INCHES, THE TEST HOLD TIME SHALL BE EXTENDED FOR AN AN ADDITIONAL 50 MINUTES. THUS, THE TOTAL MOVEMENT SHALL BE MEASURED AT 15, 20, 25, 30, 45, AND 60 MINUTES;
4. A TEST SHALL BE CONSIDERED ACCEPTABLE WHEN (1) A CREEP RATE LESS THAN 0.04 INCHES PER LOG CYCLE OF TIME BETWEEN THE 1 AND 10 MINUTE READINGS IS OBSERVED DURING CREEP TESTING AND THE RATE IS LINEAR OR DECREASING THROUGHOUT THE CREEP TEST LOAD HOLD PERIOD OR 0.08 INCHES PER LOG CYCLE OF TIME BETWEEN THE 10 AND 60 MINUTE. AND (2) A PULLOUT FAILURE DOES NOT OCCUR DURING TESTING. PULLOUT FAILURE IS DEFINED AS THE LOAD AT WHICH ATTEMPTS TO INCREASE THE TEST LOAD SIMPLY RESULT IN CONTINUED PULLOUT MOVEMENT OF THE MICROPILE.

☒ NO EXCEPTIONS TAKEN ☐ REVISE AND RESUBMIT
☐ MAKE CORRECTIONS NOTED ☐ REVIEW NOT REQUIRED

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kpff KPFF Consulting Engineers
Date 07/09/2024
By Nick Saari, SE

CONDON · JOHNSON & ASSOCIATES, INC.
CONTRACTORS AND ENGINEERS
GROUND IMPROVEMENTS, DEEP FOUNDATIONS, MICROPILES, DRILLED SHAFTS AND SHORING
Oakland | Seattle | Los Angles | San Diego | Portland
Address: 9012 South 208th Street, Kent, WA, 98031
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DESIGNED BY:	DRAWN BY:	REVIEWED BY:
JB	SP	JB

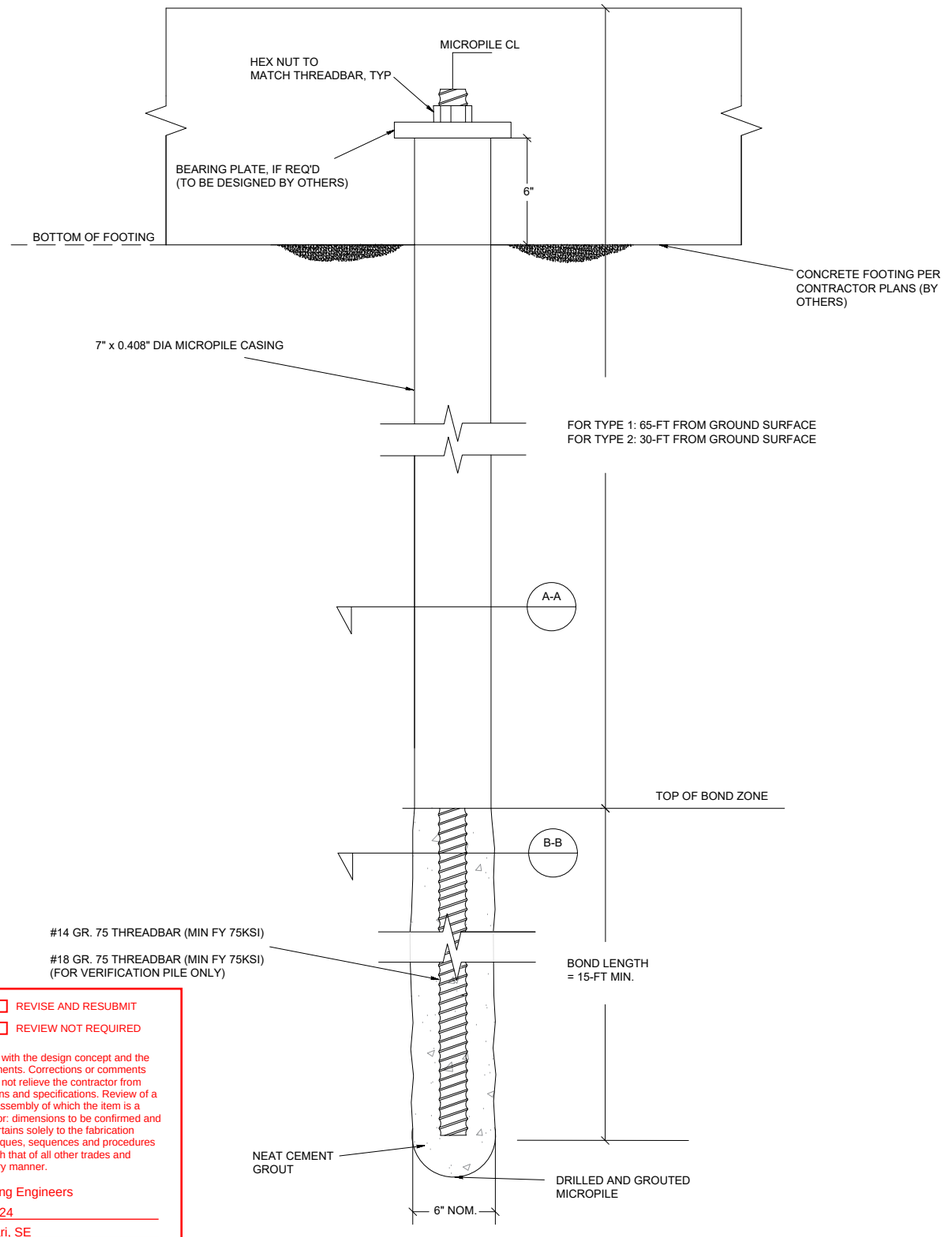
REGISTERED PROFESSIONAL ENGINEER 102656PE OREGON MAY 09, 2023 JESSEE L. BOGENOFF EXPIRES: 12/31/25

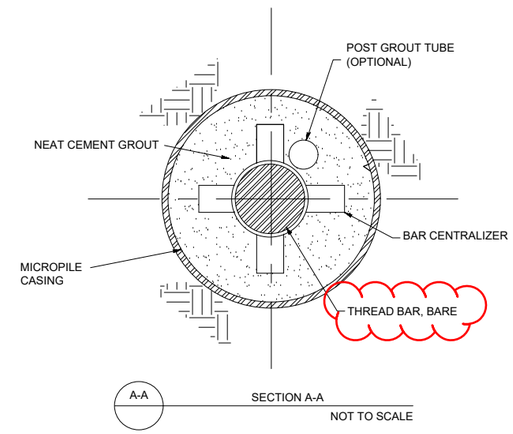
DRAWING: MICROPILE GENERAL INFORMATION

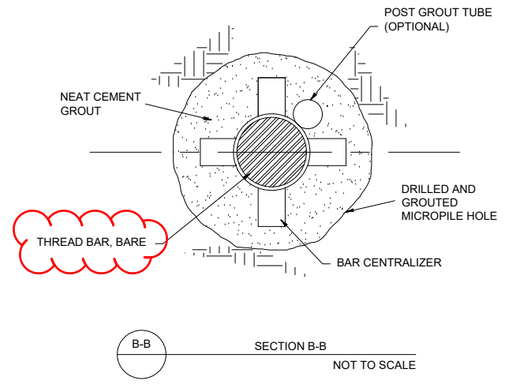
No.	DATE	BY	REVISIONS
0	03/01/2024		FOR REVIEW
1	05/24/2024		REVISION 1
2	07/02/2024		REVISION 2

PROJECT:	LOCATION:	SCALE:
PCC SYLVANIA HT WEST RENOVATION	PORTLAND, OREGON	NTS
OWNER:	GENERAL CONTRACTOR:	JOB NUMBER:
PORTLAND COMMUNITY COLLEGE	FORTIS CONSTRUCTION, INC	24018
		DATE: 07/02/2024
		SHEET NUMBER: MP-01

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kpff
KPFF Consulting Engineers
Date 07/09/2024
By Nick Saari, SE

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CONTRACTORS AND ENGINEERS

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DESIGNED BY:	DRAWN BY:	REVIEWED BY:
JB	SP	JB

REGISTERED PROFESSIONAL ENGINEER
102656PE
OREGON
MAY 09, 2023
JESSEE L. BOGENOFF
EXPIRES: 12/31/25

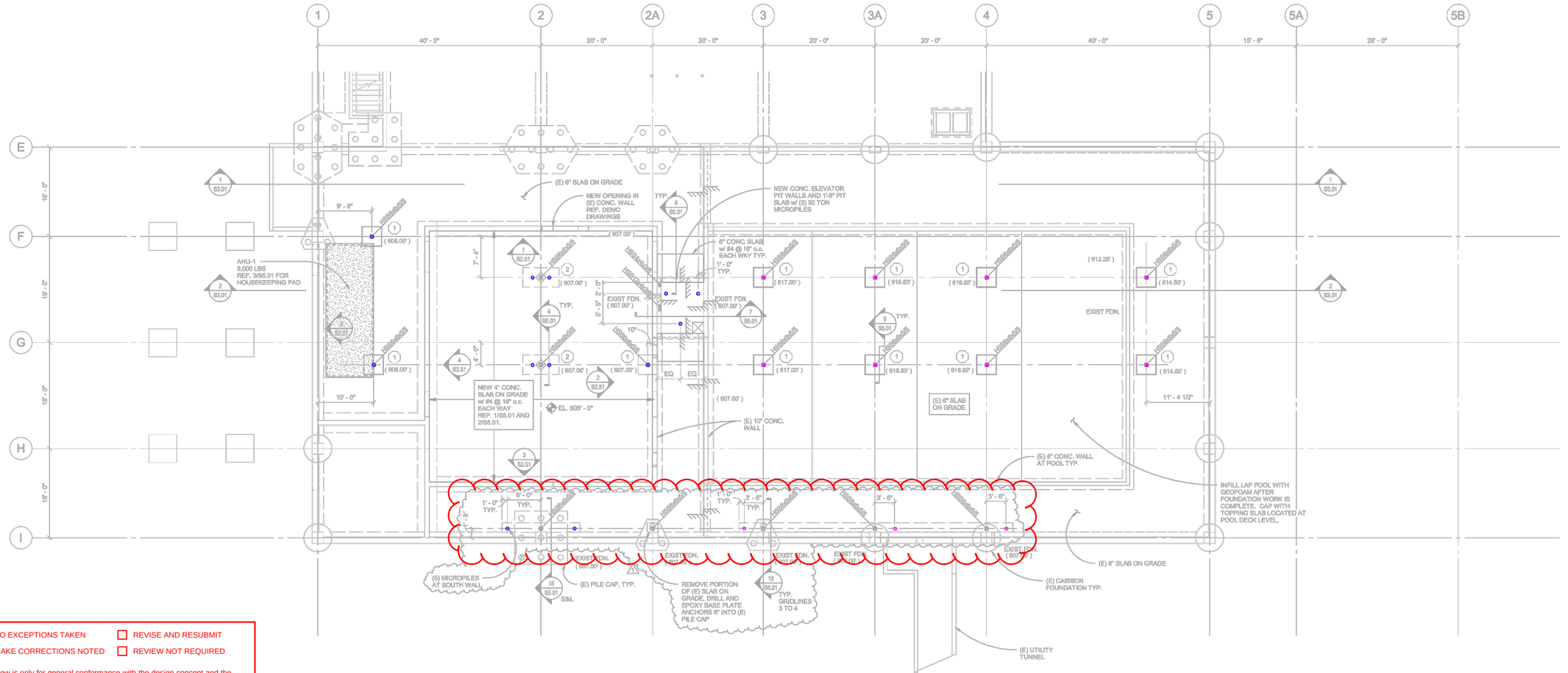
DRAWING:
MICROPILE DETAILS

No.	DATE	BY	REVISIONS
0	03/01/2024		FOR REVIEW
1	05/24/2024		REVISION 1
2	07/02/2024		REVISION 2

PROJECT:	LOCATION:	SCALE:
PCC SYLVANIA HT WEST RENOVATION	PORTLAND, OREGON	NTS
OWNER:	GENERAL CONTRACTOR:	JOB NUMBER:
PORTLAND COMMUNITY COLLEGE	FORTIS CONSTRUCTION, INC	24018

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DATE:	SHEET NUMBER:
07/02/2024	MP-02



LEGEND (NTS):

- MICROPILE TYPE 1
- MICROPILE TYPE 2

☒ NO EXCEPTIONS TAKEN ☐ REVISE AND RESUBMIT
☐ MAKE CORRECTIONS NOTED ☐ REVIEW NOT REQUIRED

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kpff
KPFF Consulting Engineers
Date 07/09/2024
By Nick Saari, SE

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CONTRACTORS AND ENGINEERS

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REGISTERED PROFESSIONAL ENGINEER 102656PE OREGON MAY 09, 2023 JESSEE L. BOGENOFF EXPIRES: 12/31/25

DESIGNED BY:	DRAWN BY:	REVIEWED BY:
JB	SP	JB

DRAWING: MICROPILE PLAN VIEW

No.	DATE	BY	REVISIONS
0	03/01/2024		FOR REVIEW
1	05/24/2024		REVISION 1
2	07/02/2024		REVISION 2

PROJECT: PCC SYLVANIA HT WEST RENOVATION
LOCATION: PORTLAND, OREGON
SCALE: NTS
OWNER: PORTLAND COMMUNITY COLLEGE
GENERAL CONTRACTOR: FORTIS CONSTRUCTION, INC
JOB NUMBER: 24018
DATE: 07/02/2024
SHEET NUMBER: MP-03

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APPENDIX B

Micropile Calculations

Stiffness Calculation Flags	
Factor on Grout in Unbonded Length	0.50
Factor on Casing in Unbonded Length	1.00
Factor on Grout in Bond Length	0.00

Steel Pipe / Casing Data & Calculations	
Material Specification	API N80
Yield Stress, F_y (ksi)	80.0
Young's Modulus, E (ksi)	30,000
Corrosion Allowance (in)	0.000
Nominal Size	7" x 0.408"
Outer Diameter, D_O (in)	7.000
Casing Wall Thickness (in)	0.408
Reduced Outer Diameter, D_{Or} (in)	7.000
Inner Diameter, D_I (in)	6.184
Wall Thickness, t (in)	0.408
Area, A (in^2)	8.45
Section Modulus, S (in^3)	13.16
Moment of Inertia, I (in^4)	46.07

Threaded Bar Data	
Material Specification	ASTM A615
Yield Stress, F_Y (ksi)	75.0
Young's Modulus, E (ksi)	30,000
Nominal Size	#14
Area (in^2)	2.25

Grout Data & Calculations	
Material Specification	ASTM C150 Type IL
Design 28-Day Compressive Strength, f'_c (ksi)	4.0
Young's Modulus, E (ksi)	3,605
Diameter of Grouted Section (in)	6.184
Manufacturer Bar Diameter (in)	1.750
Wall Thickness (in)	2.217
Area (in^2)	27.79
Section Modulus (in^3)	23.07
Moment of Inertia (in^4)	71.33

Micropile Axial Stiffness Calculations	
Unbonded Length, L_U (ft)	30.0
Bond Length, L_B (ft)	15.0
Length of Casing Plunged Into Bond Zone, L_P (ft)	0.0
Unbonded Length Axial Stiffness, K_U (kip/ft)	12,369
Plunge Length Axial Stiffness, K_P (kip/ft)	N/A
Fraction of Total Load at Base of Plunge	1.00
Bond Length (Below Plunge) Axial Stiffness, K_B (kip/ft)	4,500
Micropile Axial Stiffness, K_{MP} (kip/ft)	5,209

Deflection Calculations	
Design Load (kip)	100.0
Load Due to Mislocation - 110% of Design Load (kip)	110.0
Test Factor	2.00
Estimated Tip Deflection (in)	0.00
Maximum Load (kip)	200.0
Computed Elastic Deflection (in)	0.25
Total Deflection (in)	**0.25**

Figure 1
Type 2 Micropile Deflection Calculation
Tension Proof Test At Design Loading

MATERIAL DATA	
Casing Material Specification	API N80
Casing Yield Stress, $F_{y,c}$ (ksi)	80.0
Grout Strain Compatibility	0.003
Material Blow Counts	50
Corrected Grout Strain Compability	0.003
Strain Compatibility Grout Crushing Yield Strength (ksi)	87.0
Bar Material Specification	ASTM A615
Bar Yield Stress, $F_{y,b}$ (ksi)	75.00
Controlling Steel Yield Stress, F_y (ksi)	75.00

CASING AND BAR DATA	
Casing Outer Diameter, D_O (in)	7.000
Casing Wall Thickness, t (in)	0.408
Casing Corrosion Allowance (in)	0.000
Bar Size	#14
Bar Area (in^2)	2.25
Casing Inner Diameter, D_I (in)	6.18
Casing Area, A (in^2)	8.45

GROUT DATA	
Grout Material Specification	ASTM C150 Type I
Design 28-Day Compressive Strength, f'_c (ksi)	4.0
Ultimate Soil-Grout Bond Strength, α (psi)	59.0
Length of Casing Plunged Into Bond Zone, L_P (ft)	0.0
Grouted Bond Zone Nominal Diameter, D_g (in)	6.0
Allowable Pullout Resistance, FS=2.0, Q_n (kip/ft)	**6.67**
Grout Net Area - Cased Zone, $A_{g,c}$ (in^2)	27.79
Grout Net Area - Bond Zone, $A_{g,b}$ (in^2)	26.02

STRENGTH REDUCTION FACTORS (SERVICE LOAD DESIGN)	
Compression	0.47
Grout	0.40

PILE DESIGN STRENGTHS	
Cased Length - Design Strength - Compression, $P_{c,c}$ (kip)	423.0
Uncased Length - Design Strength - Compression, $P_{u,c}$ (kip)	121.2
Load in Bond Zone Due to Mislocation - 110% of Design Load (kip)	110.0
Design Load Taken up in Plunge Length (kip)	0.0
Load at Bottom of Casing Due to Mislocation - 110% Design Load (kip)	110.0
Design Check for Cased Length in Compression	**OK**
Design Check for Uncased Length in Compresssion	**OK**

Figure 2
Structural Calculations For Type 2 Micropile
Tension Proof Test At Design Loading

Stiffness Calculation Flags	
Factor on Grout in Unbonded Length	0.50
Factor on Casing in Unbonded Length	1.00
Factor on Grout in Bond Length	0.00

Steel Pipe / Casing Data & Calculations	
Material Specification	API N80
Yield Stress, F_y (ksi)	80.0
Young's Modulus, E (ksi)	30,000
Corrosion Allowance (in)	0.000
Nominal Size	7" x 0.408"
Outer Diameter, D_O (in)	7.000
Casing Wall Thickness (in)	0.408
Reduced Outer Diameter, D_{Or} (in)	7.000
Inner Diameter, D_I (in)	6.184
Wall Thickness, t (in)	0.408
Area, A (in^2)	8.45
Section Modulus, S (in^3)	13.16
Moment of Inertia, I (in^4)	46.07

Threaded Bar Data	
Material Specification	ASTM A615
Yield Stress, F_Y (ksi)	75.0
Young's Modulus, E (ksi)	30,000
Nominal Size	#14
Area (in^2)	2.25

Grout Data & Calculations	
Material Specification	ASTM C150 Type IL
Design 28-Day Compressive Strength, f'_c (ksi)	4.0
Young's Modulus, E (ksi)	3,605
Diameter of Grouted Section (in)	6.184
Manufacturer Bar Diameter (in)	1.750
Wall Thickness (in)	2.217
Area (in^2)	27.79
Section Modulus (in^3)	23.07
Moment of Inertia (in^4)	71.33

Micropile Axial Stiffness Calculations	
Unbonded Length, L_U (ft)	65.0
Bond Length, L_B (ft)	15.0
Length of Casing Plunged Into Bond Zone, L_P (ft)	0.0
Unbonded Length Axial Stiffness, K_U (kip/ft)	5,709
Plunge Length Axial Stiffness, K_P (kip/ft)	N/A
Fraction of Total Load at Base of Plunge	1.00
Bond Length (Below Plunge) Axial Stiffness, K_B (kip/ft)	4,500
Micropile Axial Stiffness, K_{MP} (kip/ft)	3,493

Deflection Calculations	
Design Load (kip)	100.0
Load Due to Mislocation - 110% of Design Load (kip)	110.0
Test Factor	2.00
Estimated Tip Deflection (in)	0.00
Maximum Load (kip)	200.0
Computed Elastic Deflection (in)	0.38
Total Deflection (in)	**0.38**

Figure 1
Type 1 Micropile Deflection Calculation
Tension Proof Test At Design Loading

MATERIAL DATA	
Casing Material Specification	API N80
Casing Yield Stress, $F_{y,c}$ (ksi)	80.0
Grout Strain Compatibility	0.003
Material Blow Counts	50
Corrected Grout Strain Compability	0.003
Strain Compatibility Grout Crushing Yield Strength (ksi)	87.0
Bar Material Specification	ASTM A615
Bar Yield Stress, $F_{y,b}$ (ksi)	75.00
Controlling Steel Yield Stress, F_y (ksi)	75.00

CASING AND BAR DATA	
Casing Outer Diameter, D_O (in)	7.000
Casing Wall Thickness, t (in)	0.408
Casing Corrosion Allowance (in)	0.000
Bar Size	#14
Bar Area (in^2)	2.25
Casing Inner Diameter, D_I (in)	6.18
Casing Area, A (in^2)	8.45

GROUT DATA	
Grout Material Specification	ASTM C150 Type I
Design 28-Day Compressive Strength, f'_c (ksi)	4.0
Ultimate Soil-Grout Bond Strength, α (psi)	59.0
Length of Casing Plunged Into Bond Zone, L_P (ft)	0.0
Grouted Bond Zone Nominal Diameter, D_g (in)	6.0
Allowable Pullout Resistance, FS=2.0, Q_n (kip/ft)	**6.67**
Grout Net Area - Cased Zone, $A_{g,c}$ (in^2)	27.79
Grout Net Area - Bond Zone, $A_{g,b}$ (in^2)	26.02

STRENGTH REDUCTION FACTORS (SERVICE LOAD DESIGN)	
Compression	0.47
Grout	0.40

PILE DESIGN STRENGTHS	
Cased Length - Design Strength - Compression, $P_{c,c}$ (kip)	423.0
Uncased Length - Design Strength - Compression, $P_{u,c}$ (kip)	121.2
Load in Bond Zone Due to Mislocation - 110% of Design Load (kip)	110.0
Design Load Taken up in Plunge Length (kip)	0.0
Load at Bottom of Casing Due to Mislocation - 110% Design Load (kip)	110.0
Design Check for Cased Length in Compression	**OK**
Design Check for Uncased Length in Compresssion	**OK**

Figure 2
Strcutural Calculations For Type 1 Micropile
Tension Proof Test At Design Loading

Houston, August 6th, 2024.

Re: Testing and Rating Scaffold Components.

To whom it may concern:

In response to your question about our published data for our scaffold components, let me inform you that these components are tested following ANSI/SAIA A11.1 protocols. When specified, they are typically tested to failure/Load refusal, and this value is divided into 4 as safety factor.

If you have any questions, do not hesitate to contact us.

Kevin Reinoso | Vice President of Engineering and Quality
Direct Scaffold Supply

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ABBREVIATIONS

(E)	EXISTING TO REMAIN	FACP	FIRE ALARM CONTROL PANEL	OC	ON CENTER
(F)	FUTURE	FBO	FURNISHED BY OTHERS	OD	OUTSIDE DIAMETER
(R)	EXISTING TO BE REMOVED	FC	FOOT CANDLES	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED
(RL)	EXISTING TO BE RELOCATED	FF	FLUSH FLOOR MOUNTED	OFOI	OWNER FURNISHED, OWNER INSTALLED
AB	ABOVE COUNTER BACKSPLASH	FLA	FULL LOAD AMPERES	OS	OCCUPANCY SENSOR
ACU	AIR CONDITIONING UNIT	FLEX	FLEXIBLE	P	POLE
AC	ALTERNATING CURRENT	FPB	FAN POWERED BOX	PB	PUSHBUTTON
A, AMP	AMPERES	FSD	FIRE/SMOKE DAMPER	PC	PHOTOELECTRIC CONTROL
ADJ	ADJACENT	FW	FLUSH WALL MOUNTED	PNL	PANEL
AF	AMPERE (RATED) FUSE OR CB FRAME	FU	FUSE	+,POS	POSITIVE
AFF	ABOVE FINISHED FLOOR	GEN	GENERATOR	PRI	PRIMARY
AHJ	AUTHORITY HAVING JURISDICTION	GFI	GROUND FAULT CIRCUIT INTERRUPTER	REQD	REQUIRED
AIC	EQUIPMENT SHORT CIRCUIT INTERRUPT RATING (RMS SYM. AMPS)	G, GND	GROUND	RNC	RIGID NON-METALLIC CONDUIT (PVC)
AL	ALUMINUM (ALLOY)	GRAP	GENERATOR REMOTE ANNUNCIATOR PANEL	RS	RAPID START
ALC	AUTOMATIC LIGHTING CONTROL	GRC	GALVANIZED RIGID STEEL CONDUIT	RST	REMOTE STATION TRANSMITTER
AS	AMPERE (RATED) SWITCH	HLG	HANDLE LOCK-ON(OFF)	SEC	SECONDARY
AT	CIRCUIT BRKR TRIP SETTING (AMPS)	HP	HORSEPOWER	SN	SHEET NOTE
ATS	AUTOMATIC TRANSFER SWITCH	HTR	HEATER	SOL	SOLENOID
AUTO	AUTOMATIC	HZ	HEIRTZ (CYCLES PER SECOND)	SPD	SURGE PROTECTION DEVICE
AUX	AUXILIARY	IES	ILLUMINATING ENGINEERING SOCIETY	SPDT	SINGLE POLE DOUBLE THROW
AWG	AMERICAN WIRE GAUGE	IBC	INDIVIDUAL BRANCH CIRCUIT	SPST	SINGLE POLE SINGLE THROW
BC	BARE COPPER	ID	INSIDE DIAMETER	SUB	SUBSTATION
BG	BELOW GRADE	IG	ISOLATED GROUND	SWBD	SWITCHBOARD
BRKR	CIRCUIT BREAKER	IMC	INTERMEDIATE METAL CONDUIT	SWGR	SWITCHGEAR
C	CONDUIT (CIRCULAR RACEWAY)	KCMIL	THOUSAND CIRCULAR MILS	TB	TERMINAL BOARD
CAB	CABINET	KN	KEYED NOTE	TC	TIME CLOCK
CB	CIRCUIT BREAKER	KO	KNOCK OUT	TEL	TELEPHONE
CFM	CUBIC FEET PER MINUTE	KW	KILOWATTS	TYP	TYPICAL
CKT	CIRCUIT	KVA	KILOVOLT-AMPERES	UF	UNDERFLOOR
CLG	CEILING	LTG	LIGHTING	UG	UNDERGROUND
CO	CONDUIT ONLY	LCP	LIGHTING CONTROL PANEL	UL	UNDERWRITERS LAB
CPT	CONTROL POWER TRANSFORMER	MAX	MAXIMUM	UON	UNLESS OTHERWISE NOTED
CT	CURRENT TRANSFORMER	MCA	MINIMUM CIRCUIT AMPERES	UPS	UNINTERRUPTIBLE POWER SUPPLY
CU	COPPER	MCB	MAIN CIRCUIT BREAKER	UTX	UTILITY TRANSFORMER
DC	DIRECT CURRENT	MFR	MANUFACTURER	V	VOLTS
DISC	DISCONNECT	MIN	MINIMUM	VA	VOLT-AMPERES
DIA	DIAMETER	MISC	MISCELLANEOUS	VFD	VARIABLE FREQUENCY DRIVE
DIV	DIVISION	MLO	MAIN LUGS ONLY	W	WATT
DP	DISTRIBUTION PANEL	MO	MANUAL OPERATOR	W/	WITH
DPDT	DOUBLE POLE DOUBLE THROW	MTD	MOUNTED	W/O	WITHOUT
DPST	DOUBLE POLE SINGLE THROW	MTR	MOTOR	WP	WEATHERPROOF
DWG	DRAWING	N	NEUTRAL (GROUNDED CONDUCTOR)	XFMR	TRANSFORMER
E.EM	EMERGENCY	NC	NORMALLY CLOSED	XP	EXPLOSION PROOF
EF	EXHAUST FAN	NEC	NATIONAL ELECTRICAL CODE	Z	ZONE
EMT	ELECTRICAL METALLIC TUBING	-,NEG	NEGATIVE	", IN	INCHES
EO	ELECTRICALLY OPERATED	NEMA	NATIONAL ELECTRICAL MF'GR'S ASSOC.	', FT	FEET
EWC	ELECTRIC WATER COOLER	NL	NIGHT LIGHT (UNSWITCHED)	Ø,PH	PHASE
EWH	ELECTRIC WATER HEATER	NO	NORMALLY OPEN	>	GREATER THAN
FA	FIRE ALARM	NTS	NOT TO SCALE	<	LESS THAN
FAAP	FIRE ALARM ANNUNCIATOR PANEL	NP	NAMEPLATE	≥	GREATER THAN OR EQUAL TO

FIRE ALARM DEVICES

SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
AM	ALARM MODULE	H	INTERCOM HORN - WALL
RK	BEAM DETECTOR RECEIVER	I	IONIZATION DETECTOR - CEILING
TK	BEAM DETECTOR TRANSMITTER	I	IONIZATION DETECTOR - WALL
B	BELL - WALL	I	IONIZATION DETECTOR W/ HORN/STROBE - CEILING
CM	CONTROL MODULE	K	KNOX BOX - 3200 SERIES
FACP	FIRE ALARM CONTROL PANEL - WALL	D	MAGNETIC DOOR HOLDER
F	FIRE ALARM PULL STATION - WALL	P	PHOTOELECTRIC DETECTOR - CEILING
P	FIRE ALARM STROBE - WALL	P	PHOTOELECTRIC DETECTOR - WALL
F	FIRE ALARM W/ HORN/STROBE - CEILING	P	PHOTOELECTRIC DETECTOR W/ HORN/STROBE - CEILING
F	FIRE ALARM W/ HORN/STROBE - WALL	S	SMOKE DETECTOR - DUCT
DR	FIRE DOOR RELEASE	S	SMOKE/CO COMBINATION SENSOR - CEILING
H	HEAT DETECTOR - CEILING		SPRINKLER FLOW SWITCH
H	HEAT DETECTOR - WALL		SPRINKLER TAMPER SWITCH
H	INTERCOM HORN - CEILING		

DRAWING INDEX

SHEET NO.	SHEET NAME
E0.01	COVER SHEET - ELECTRICAL
ED3.00	BASEMENT OVERALL DEMOLITION PLAN - POWER
ED3.01	LEVEL 1 OVERALL DEMOLITION PLAN - POWER
ED3.02	LEVEL 2 OVERALL DEMOLITION PLAN - POWER
ED3.03	LEVEL 3 OVERALL DEMOLITION PLAN - POWER
ED3.04	ROOF OVERALL DEMOLITION PLAN - POWER
ED5.00	DEMO SINGLE LINE DIAGRAM

ELECTRICAL DEVICES

SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
	BUS DUCT		RECEPTACLE - CEILING - DOUBLE DUPLEX
	BUS BAR		RECEPTACLE - CEILING - DUPLEX
	BUS PLUG		RECEPTACLE - CEILING - SPECIALTY
	CEILING FAN		RECEPTACLE - FLOOR - DOUBLE DUPLEX
			RECEPTACLE - FLOOR - DUPLEX
	ELECTRICAL EQUIPMENT CONNECTION		RECEPTACLE - WALL - DOUBLE DUPLEX
M	ELECTRICAL CONNECTION - M&P SCHEDULED MOTOR		RECEPTACLE - WALL - DUPLEX
	EPO		RECEPTACLE - WALL - SIMPLEX
	GROUND BAR		RECEPTACLE - WALL - SPECIALTY
J	J-BOX - CEILING		RECEPTACLE - WALL - DUPLEX HALF SWITCHED
J	J-BOX - FLOOR		SHADING INDICATES CONNECTION TO ALTERNATE POWER SOURCE
J	J-BOX - WALL		
C	CLOCK - WALL		
	PEDESTAL W/ DEVICES - SURFACE		
FB-1	FLOORBOX - POWER	C	'C' INDICATES SPLIT WIRED CONTROLLED RECEPTACLE
FB-2	FLOORBOX - POWER & DATA	AB	'AB' INDICATES ABOVE COUNTER DEVICE
FB-3	FLOORBOX - POWER, DATA, TELECOM		
PT-1	POKE THRU - POWER	GFI	'GFI' INDICATES GROUND FAULT CIRCUIT INTERRUPTER DEVICE
PT-2	POKE THRU- POWER & DATA	WP	'WP' INDICATES WEATHER-PROOF DEVICE
PT-3	POKE THRU - POWER, DATA, TELECOM		

RISER SYMBOLS

SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
	AUTOMATIC TRANSFER SWITCH		GROUND
	BUSWAY STAB IN - BUS TAP, CIRCUIT BREAKER, FUSE DISCONNECT	M KW	METER, UTILITY METER
	SWITCH, CIRCUIT BREAKER	M	MOTOR
	CURRENT TRANSFORMER	PNL L2P1 200A	PANELBOARD
F C VFD	DISCONNECT - FUSED, ENCLOSED, VFD		
	DISCONNECT W/ MAGNETIC MOTOR STARTER (CONTROLLER) OR CONTACTOR	T	TRANSFORMER
	MAGNETIC MOTOR STARTED (CONTROLLER) OR CONTACTOR	T	UTILITY TRANSFORMER
DIST. PNL H2D1 800A	DISTRIBUTION PANEL	T	UTILITY TRANSFORMER - WITH VAULT
2004A	FEEDER TAG		
	FUSED BREAKER		
G	GENERATOR		

LIGHTING DEVICES

SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
	CONTROL PANEL - WALL	$D	SWITCH - DIMMER
$OS	OCCUPANCY SENSOR - WALL	$4	SWITCH - FOUR-WAY
OS	OCCUPANCY SYMBOL - CEILING	$K	SWITCH - KEY-OPERATED
OS DT	OCCUPANCY SYMBOL - CEILING DUAL TECHNOLOGY	$LV	SWITCH - LOW-VOLTAGE
PC	PHOTO CELL - CEILING	$T	SWITCH - THERMAL
$PL	PILOT LIGHT	$3	SWITCH - THREE-WAY
PP	POWER PACK - CEILING	$TS	SWITCH - TIMER
R	RELAY - CEILING	$2	SWITCH - TWO-WAY
$	SWITCH	$WP	SWITCH - WEATHER-PROOF

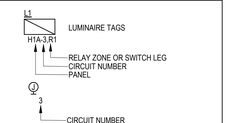
LIGHTING FIXTURES

SYMBOLS	DESCRIPTION	SYMBOLS	DESCRIPTION
	BOLLARD		LINEAR STRIP - WALL
	CONCEALED EGRESS LIGHT		LINEAR TROFFER - CEILING
	CONTINUOUS LINEAR LED		MULTI-ADJUSTABLE LIGHT - CEILING
	DECORATIVE PENDANT		ROUND LIGHT - ADJUSTABLE - CEILING
	EMERGENCY BUG EYES - WALL		ROUND LIGHT - DOWNLIGHT - CEILING
	EXIT LIGHT - CEILING		ROUND LIGHT - IN-GRADE
	EXIT LIGHT - PERPENDICULAR TO WALL		ROUND LIGHT - SURFACE CAN - CEILING
	EXIT LIGHT - SURFACE MOUNTED		ROUND LIGHT - WALL
	LIGHT - SITE POLE		ROUND LIGHT - WALL WASH - CEILING
			SQUARE LIGHT - SITE - WALL
	LIGHT - TRACK		STEP LIGHT - SITE - WALL
	LIGHT - TRACK HEAD		SHADING INDICATES CONNECTION TO ALTERNATE POWER SOURCE
	LINEAR PENDANT - SUSPENDED		
	LINEAR STRIP		

ELECTRICAL EQUIPMENT

SYMBOLS	DESCRIPTION
	ELECTRICAL EQUIPMENT
T	DRY-TYPE TRANSFORMER WITH CODE CLEARANCES
	PANELBOARD - SURFACE MOUNTED
	PANELBOARD - RECESS MOUNTED
	SERVICE AND/OR DISTRIBUTION EQUIPMENT WITH CODE CLEARANCE
	ELECTRICAL CLEARANCE
	UTILITY TRANSFORMER
	UTILITY VAULT - PRECAST (OLD CASTLE)

STANDARD LABELING



WIRING

SYMBOLS	DESCRIPTION
	NEW
	UNDERGRADE OR CONCEALED IN FLOOR
	EXISTING TO REMAIN
	EXISTING TO BE DEMOLISHED
	FUTURE
	CONDUIT RUN TURNED UP THROUGH FLOOR OR CEILING. CORE & FIREPROOF AS REQUIRED
	CONDUIT RUN TURNED DOWN THROUGH FLOOR OR CEILING. CORE & FIREPROOF AS REQUIRED
	CONDUIT STUBBED OUT AT LOCATION SHOWN. PROVIDE INSULATED BUSHING & PULLROPE

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Project No. 221000

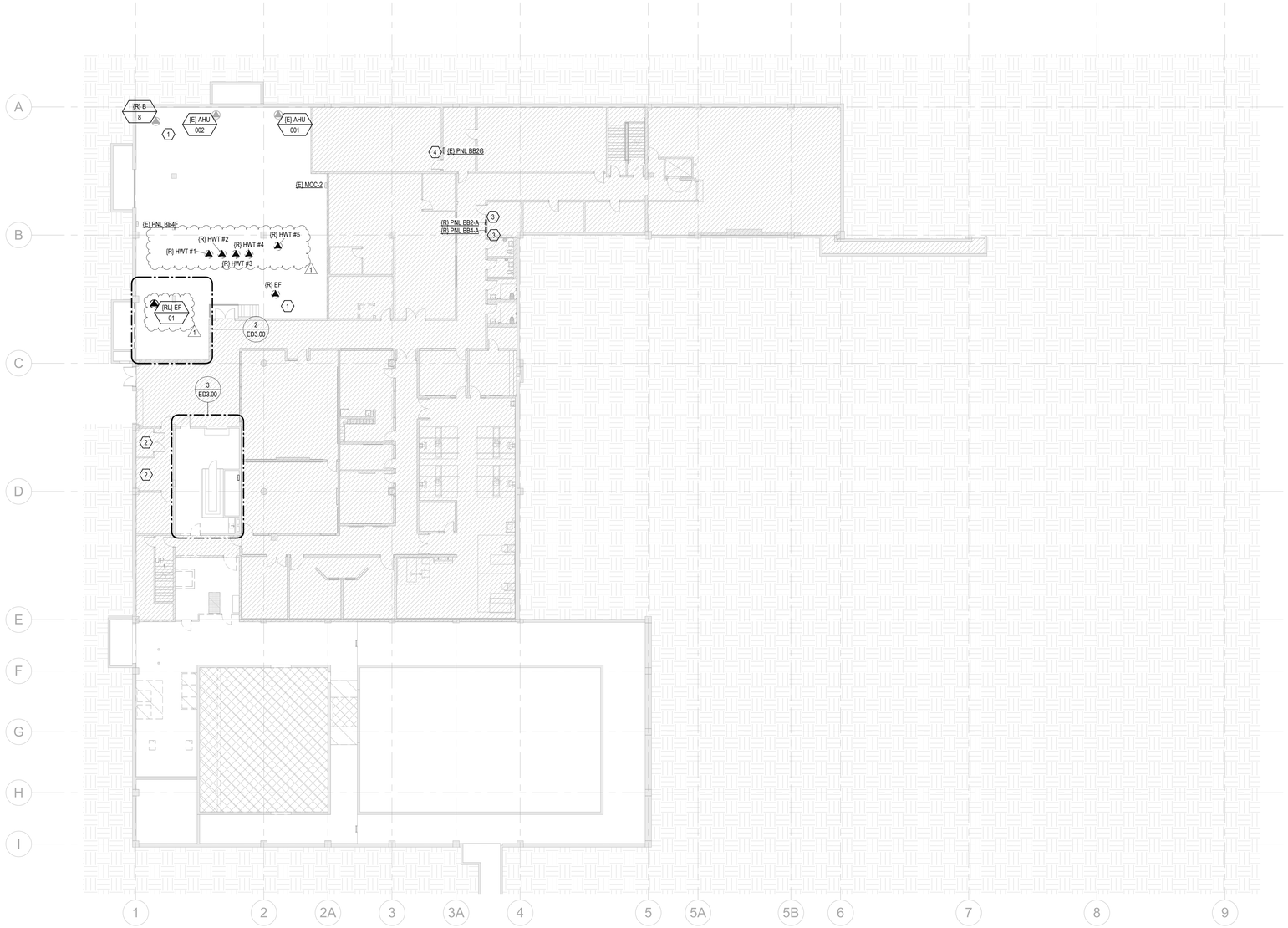
Revisions

NO.	DESCRIPTION	DATE

COVER SHEET - ELECTRICAL

E0.01

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1 BASEMENT OVERALL DEMOLITION PLAN - POWER

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

KEYED NOTES (#)

1. DEMO EXISTING ELECTRICAL CONNECTION TO MECHANICAL UNIT TO BE REMOVED. SEE MECHANICAL DEMO PLANS FOR ADDITIONAL INFORMATION.
2. DEMO EXISTING ELECTRICAL CONNECTION TO POOL EQUIPMENT TO BE REMOVED. SEE ARCHITECTURAL DEMO PLANS FOR ADDITIONAL INFORMATION.
3. EXISTING LOADS FED FROM PANEL TO BE DISCONNECTED DURING DEMO PHASE OF WORK. RECONNECT TO NEW PANEL IN EXISTING LOCATION DURING NEW PHASE OF WORK.
4. MAINTAIN EXISTING PANEL. EXISTING PANEL NAME IS A DUPLICATE. RELABEL PANEL AS 'BB2H'.

GENERAL NOTES:

A. THE ELECTRICAL CONTRACTOR SHALL PERFORM ALL RELATE DEMOLITION MODIFICATIONS, RELOCATION AND ROUTING WORK NECESSARY TO COMPLETE THE PROJECT.

B. THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND DIMENSIONS PRIOR TO SUBMITTING BIDS. REFER TO ARCHITECTURAL, MECHANICAL AND PLUMBING WORK SHOWN ON OTHER DRAWINGS AND VISIT THE SITE TO DETERMINE THE EXTENT OF THE DEMOLITION AND NEW WORK REQUIRED.

C. THE ELECTRICAL CONTRACTOR SHALL NOT DISCONNECT EQUIPMENT AND ELECTRICAL CIRCUITS IN THE RENOVATION AREA OR ANY PART OF THE BUILDING WITHOUT PRIOR NOTIFICATION AND PERMISSION FROM THE OWNER. EXTREME CARE SHALL BE TAKEN TO MINIMIZE DISTURBANCE TO THE SURROUNDING AREA.

D. ITEMS REMOVED AND NOT INDICATED FOR RELOCATION SHALL BE OFFERED TO THE OWNER. AT THE OWNER'S DIRECTION, CONTRACTOR SHALL DISPOSE OF THE MATERIAL FROM THE SITE IN ACCORDANCE WITH EPA REGULATIONS OR DELIVER ITEMS TO A DESIGNATED LOCATION FOR OWNER STORAGE.

E. IN ANY CASE WHERE WORK INCLUDES REMOVAL OF A PORTION OF THE SYSTEM, THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY MATERIALS, EQUIPMENT AND LABOR TO SUSTAIN OPERATION OF ALL PARTS OF THE SYSTEMS CONNECTING TO OR FROM THE PORTION REMOVED AND COMPLETE ALL WORK IN ACCORDANCE WITH APPLICABLE CODES.

F. ALL WIRING AND CABLES CONNECTED TO DEVICES AND EQUIPMENT TO BE DEMOLISHED SHALL BE REMOVED BACK TO THEIR SOURCE. UNLESS OTHERWISE NOTED, CONDUITS AND/OR WIRING SHALL BE RECIRCUITED AROUND THE REMOVED PORTION, KEEPING OCCUPIED PARTS OF THE BUILDING SYSTEM IN FULL SERVICE.

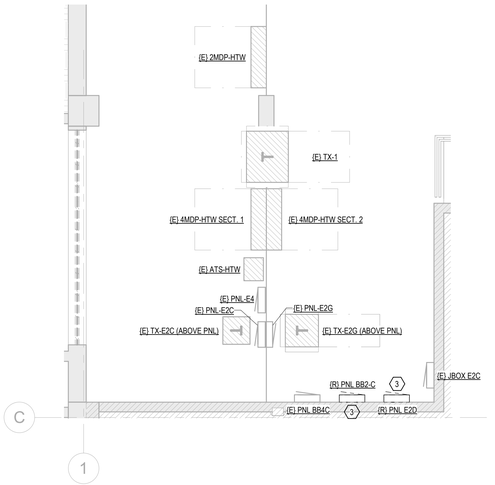
G. ALL EXISTING CONDUIT WHICH HAS BEEN ABANDONED SHALL BE REMOVED.

H. THE ELECTRICAL CONTRACTOR SHALL MAINTAIN CONTINUITY OF CIRCUITS TO REMAINING FIXTURES OR DEVICES WHEN REMOVING A FIXTURE OR DEVICE FROM A CIRCUIT THAT SERVES OTHER FIXTURES OR DEVICES THAT ARE TO REMAIN.

I. THE ELECTRICAL CONTRACTOR SHALL PROVIDE UPDATED TYPED PANEL DIRECTORIES FOR ALL PANELS AFFECTED BY THE DEMOLITION AND/OR NEW WORK. CIRCUIT BREAKERS NOT USED FOR NEW WORK SHALL BE LABELED AS "SPARE".

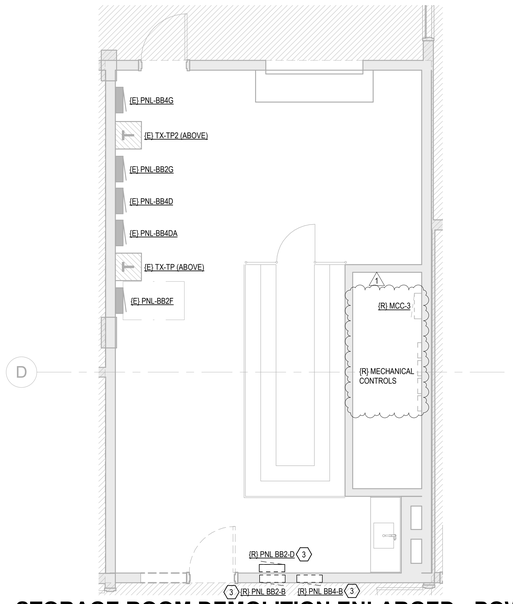
J. THE ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY LIGHTING AND POWER AS REQUIRED.

K. DEVICES IN HATCHED AREA ARE NOT IN SCOPE OF WORK AND ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.



2 MECHANICAL ROOM DEMOLITION ENLARGED - POWER

SCALE: 1/4" = 1'-0"



3 STORAGE ROOM DEMOLITION ENLARGED - POWER

SCALE: 1/4" = 1'-0"

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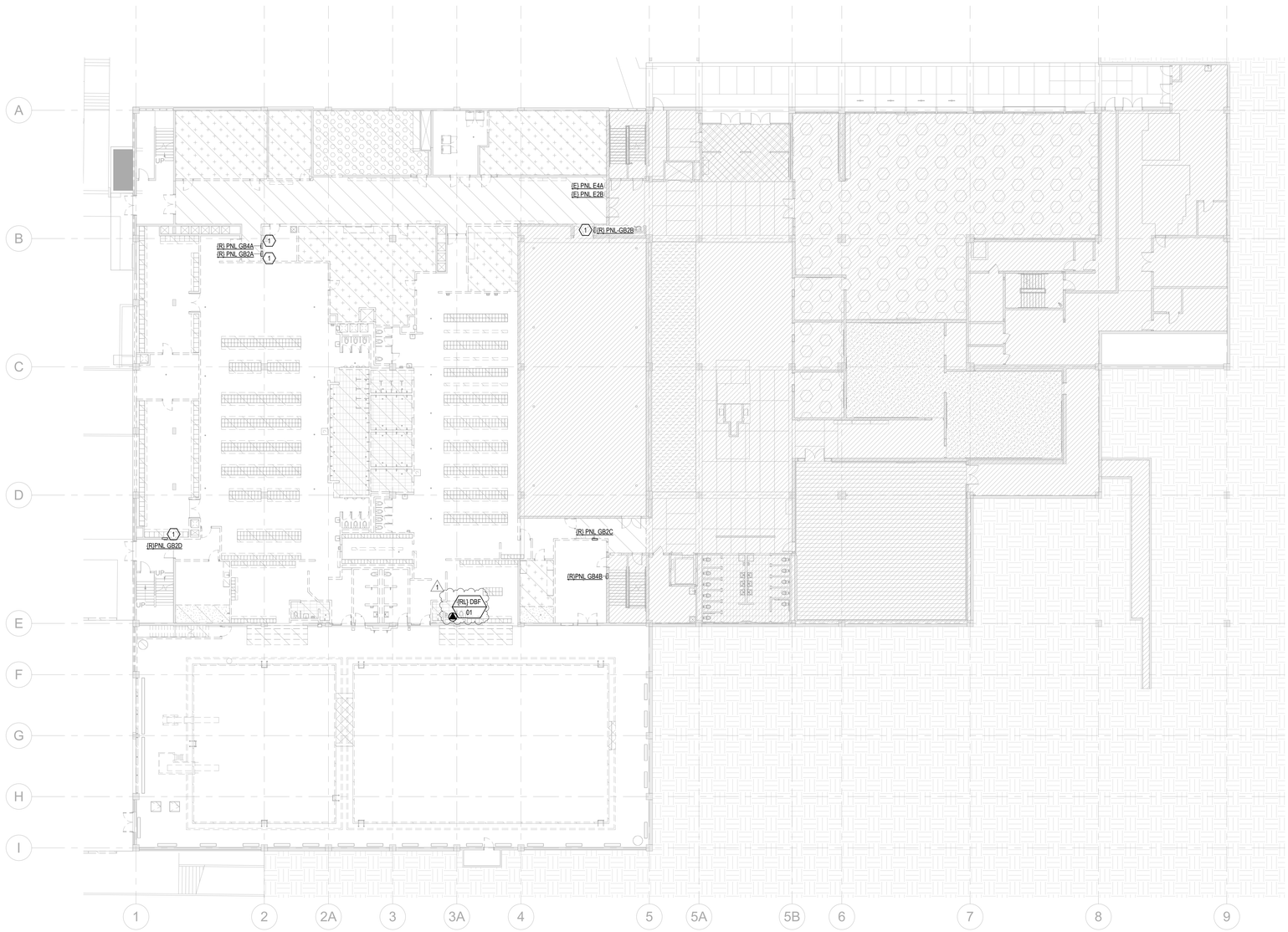
Revisions

NO.	DESCRIPTION	DATE
1	Revision 1	05-24-24

BASEMENT OVERALL DEMOLITION PLAN - POWER

ED3.00

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1 LEVEL 1 OVERALL DEMOLITION PLAN - POWER

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

GENERAL NOTES:

A. THE ELECTRICAL CONTRACTOR SHALL PERFORM ALL RELATE DEMOLITION MODIFICATIONS, RELOCATION AND ROUTING WORK NECESSARY TO COMPLETE THE PROJECT.

B. THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND DIMENSIONS PRIOR TO SUBMITTING BIDS. REFER TO ARCHITECTURAL, MECHANICAL AND PLUMBING WORK SHOWN ON OTHER DRAWINGS AND VISIT THE SITE TO DETERMINE THE EXTENT OF THE DEMOLITION AND NEW WORK REQUIRED.

C. THE ELECTRICAL CONTRACTOR SHALL NOT DISCONNECT EQUIPMENT AND ELECTRICAL CIRCUITS IN THE RENOVATION AREA OR ANY PART OF THE BUILDING WITHOUT PRIOR NOTIFICATION AND PERMISSION FROM THE OWNER. EXTREME CARE SHALL BE TAKEN TO MINIMIZE DISTURBANCE TO THE SURROUNDING AREA.

D. ITEMS REMOVED AND NOT INDICATED FOR RELOCATION SHALL BE OFFERED TO THE OWNER. AT THE OWNER'S DIRECTION, CONTRACTOR SHALL DISPOSE OF THE MATERIAL FROM THE SITE IN ACCORDANCE WITH EPA REGULATIONS OR DELIVER ITEMS TO A DESIGNATED LOCATION FOR OWNER STORAGE.

E. IN ANY CASE WHERE WORK INCLUDES REMOVAL OF A PORTION OF THE SYSTEM, THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY MATERIALS, EQUIPMENT AND LABOR TO SUSTAIN OPERATION OF ALL PARTS OF THE SYSTEMS CONNECTING TO OR FROM THE PORTION REMOVED AND COMPLETE ALL WORK IN ACCORDANCE WITH APPLICABLE CODES.

F. ALL WIRING AND CABLES CONNECTED TO DEVICES AND EQUIPMENT TO BE DEMOLISHED SHALL BE REMOVED BACK TO THEIR SOURCE. UNLESS OTHERWISE NOTED, CONDUITS AND/OR WIRING SHALL BE RECIRCUITED AROUND THE REMOVED PORTION, KEEPING OCCUPIED PARTS OF THE BUILDING SYSTEM IN FULL SERVICE.

G. ALL EXISTING CONDUIT WHICH HAS BEEN ABANDONED SHALL BE REMOVED.

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I. THE ELECTRICAL CONTRACTOR SHALL PROVIDE UPDATED TYPED PANEL DIRECTORIES FOR ALL PANELS AFFECTED BY THE DEMOLITION AND/OR NEW WORK. CIRCUIT BREAKERS NOT USED FOR NEW WORK SHALL BE LABELED AS "SPARE".

J. THE ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY LIGHTING AND POWER AS REQUIRED.

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KEYED NOTES ⟨#⟩

1. PATCH WALL. REROUTE FEEDER TO NEW LOCATION SHOWN.

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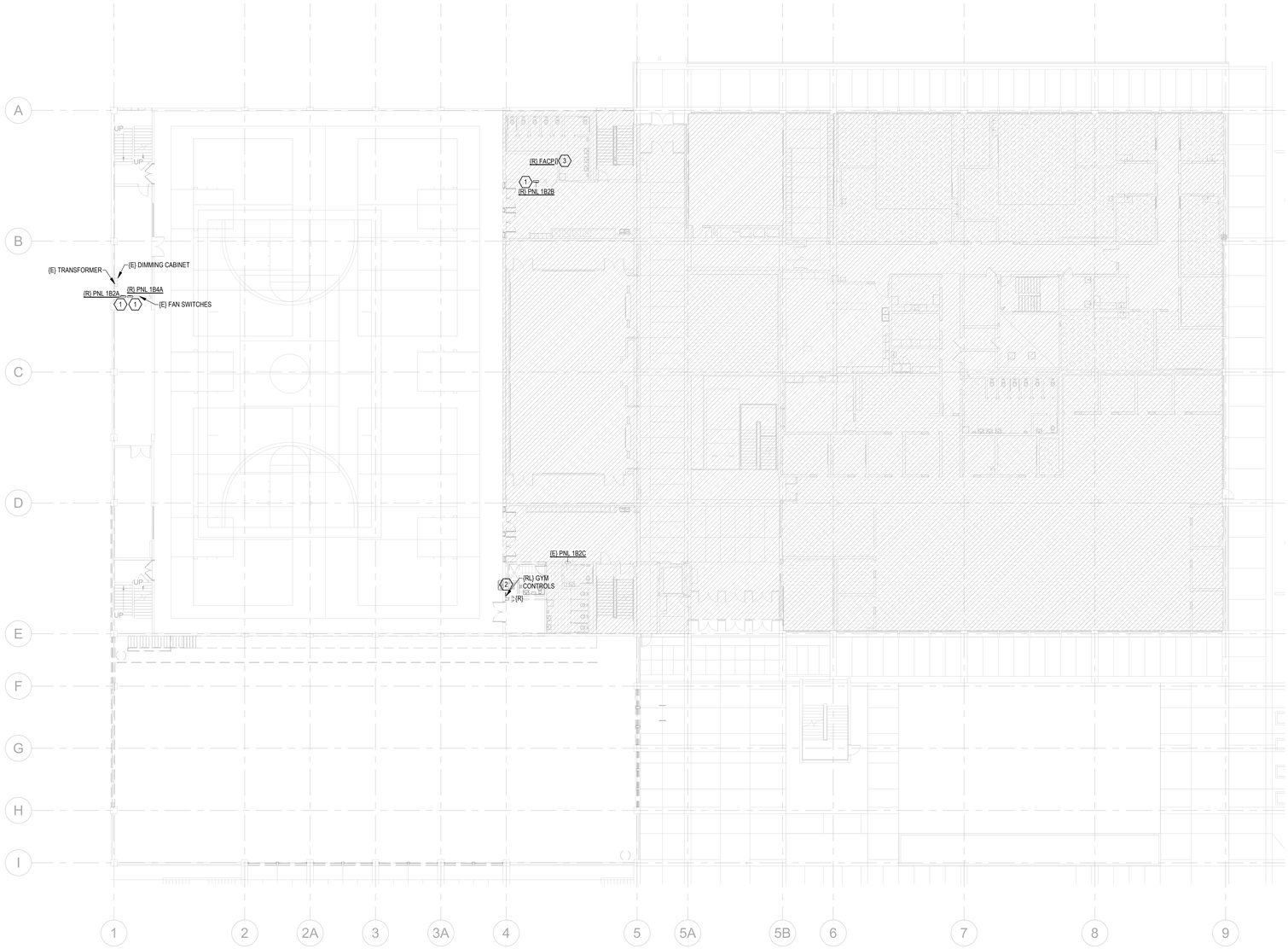
Revisions

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1	Revision 1	05-24-24

LEVEL 1 OVERALL DEMOLITION PLAN - POWER

ED3.01

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1 LEVEL 2 OVERALL DEMOLITION PLAN - POWER

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

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B. THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND DIMENSIONS PRIOR TO SUBMITTING BIDS. REFER TO ARCHITECTURAL, MECHANICAL AND PLUMBING WORK SHOWN ON OTHER DRAWINGS AND VISIT THE SITE TO DETERMINE THE EXTENT OF THE DEMOLITION AND NEW WORK REQUIRED.

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KEYED NOTES (#)

1. EXISTING LOADS FED FROM PANEL TO BE DISCONNECTED DURING DEMO PHASE OF WORK. RECONNECT TO NEW PANEL IN EXISTING LOCATION DURING NEW PHASE OF WORK.
2. RELOCATE EXISTING FAN AND SCOREBOARD CONTROLS. CONFIRM EXACT LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN.
3. REMOVE EXISTING FIRE ALARM CONTROL PANEL FOR REPLACEMENT. MAINTAIN OTHER FIRE ALARM COMPONENTS FOR RECONNECTION TO NEW CONTROL PANEL.

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Project No.	221000

Revisions

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LEVEL 2 OVERALL DEMOLITION PLAN - POWER

ED3.02

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1 LEVEL 3 OVERALL DEMOLITION PLAN - POWER

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

GENERAL NOTES:

A. THE ELECTRICAL CONTRACTOR SHALL PERFORM ALL RELATE DEMOLITION MODIFICATIONS, RELOCATION AND ROUTING WORK NECESSARY TO COMPLETE THE PROJECT.

B. THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND DIMENSIONS PRIOR TO SUBMITTING BIDS. REFER TO ARCHITECTURAL, MECHANICAL AND PLUMBING WORK SHOWN ON OTHER DRAWINGS AND VISIT THE SITE TO DETERMINE THE EXTENT OF THE DEMOLITION AND NEW WORK REQUIRED.

C. THE ELECTRICAL CONTRACTOR SHALL NOT DISCONNECT EQUIPMENT AND ELECTRICAL CIRCUITS IN THE RENOVATION AREA OR ANY PART OF THE BUILDING WITHOUT PRIOR NOTIFICATION AND PERMISSION FROM THE OWNER. EXTREME CARE SHALL BE TAKEN TO MINIMIZE DISTURBANCE TO THE SURROUNDING AREA.

D. ITEMS REMOVED AND NOT INDICATED FOR RELOCATION SHALL BE OFFERED TO THE OWNER. AT THE OWNER'S DIRECTION, CONTRACTOR SHALL DISPOSE OF THE MATERIAL FROM THE SITE IN ACCORDANCE WITH EPA REGULATIONS OR DELIVER ITEMS TO A DESIGNATED LOCATION FOR OWNER STORAGE.

E. IN ANY CASE WHERE WORK INCLUDES REMOVAL OF A PORTION OF THE SYSTEM, THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY MATERIALS, EQUIPMENT AND LABOR TO SUSTAIN OPERATION OF ALL PARTS OF THE SYSTEMS CONNECTING TO OR FROM THE PORTION REMOVED AND COMPLETE ALL WORK IN ACCORDANCE WITH APPLICABLE CODES.

F. ALL WIRING AND CABLES CONNECTED TO DEVICES AND EQUIPMENT TO BE DEMOLISHED SHALL BE REMOVED BACK TO THEIR SOURCE. UNLESS OTHERWISE NOTED, CONDUITS AND/OR WIRING SHALL BE RECIRCUITED AROUND THE REMOVED PORTION, KEEPING OCCUPIED PARTS OF THE BUILDING SYSTEM IN FULL SERVICE.

G. ALL EXISTING CONDUIT WHICH HAS BEEN ABANDONED SHALL BE REMOVED.

H. THE ELECTRICAL CONTRACTOR SHALL MAINTAIN CONTINUITY OF CIRCUITS TO REMAINING FIXTURES OR DEVICES WHEN REMOVING A FIXTURE OR DEVICE FROM A CIRCUIT THAT SERVES OTHER FIXTURES OR DEVICES THAT ARE TO REMAIN.

I. THE ELECTRICAL CONTRACTOR SHALL PROVIDE UPDATED TYPED PANEL DIRECTORIES FOR ALL PANELS AFFECTED BY THE DEMOLITION AND/OR NEW WORK. CIRCUIT BREAKERS NOT USED FOR NEW WORK SHALL BE LABELED AS "SPARE".

J. THE ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY LIGHTING AND POWER AS REQUIRED.

K. DEVICES IN HATCHED AREA ARE NOT IN SCOPE OF WORK AND ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.

KEYED NOTES (#)

1. EXISTING LOADS FED FROM PANEL TO BE DISCONNECTED DURING DEMO PHASE OF WORK. RECONNECT TO NEW PANEL IN EXISTING LOCATION DURING NEW PHASE OF WORK.

2. REMOVE AND SALVAGE EXISTING VFD CONTROLS.

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EXPIRES: 6/30/24
REGISTERED PROFESSIONAL ENGINEER
74350
JENNIFER K. STREB
JUNE 2, 2010

SAMATA
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biella
LIGHTING DESIGN

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PCC SY-HT Building West Side Renovation
12000 SW 49th Ave.
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Date 05/24/2024
Project No. 221000

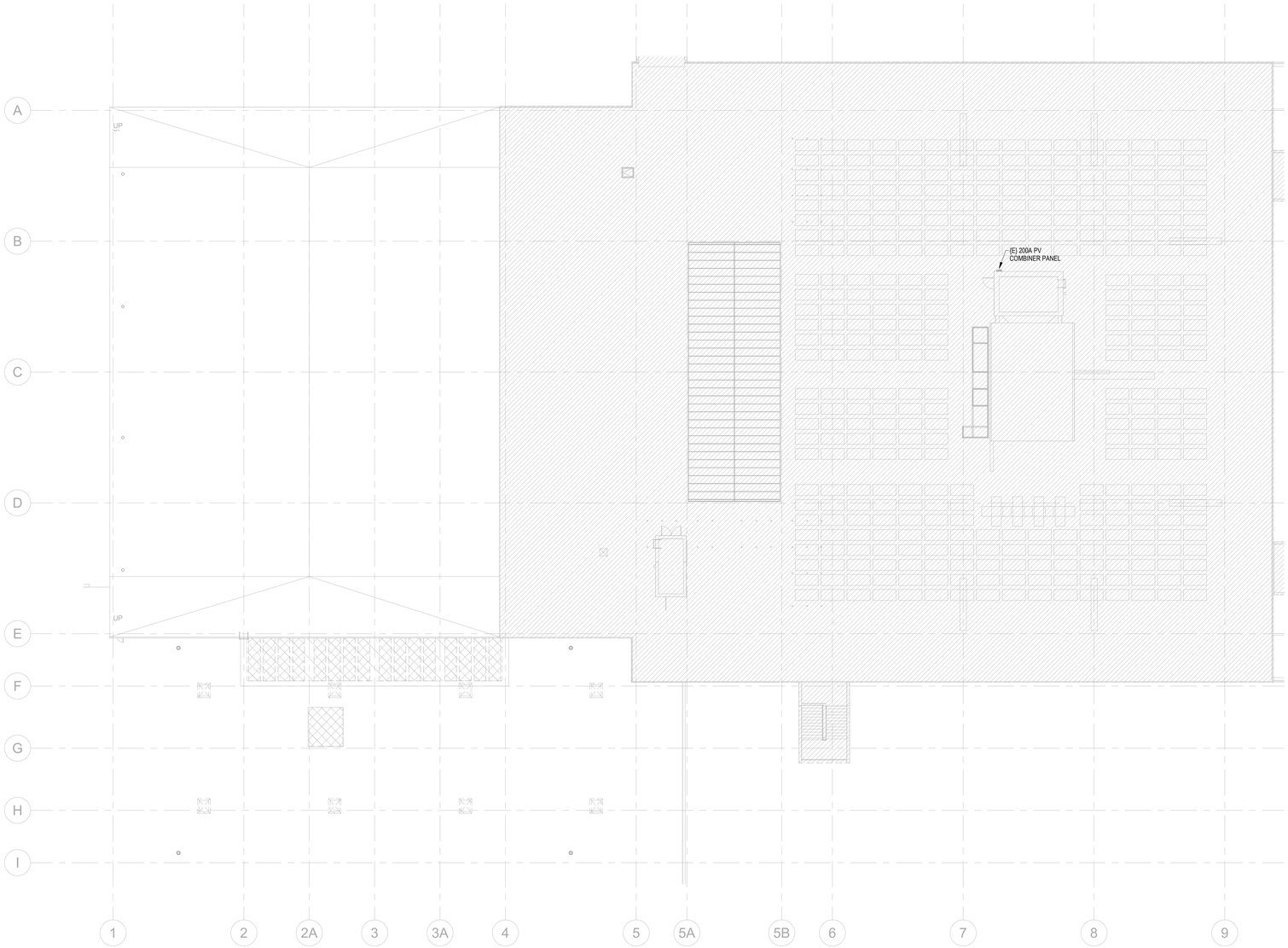
Revisions

NO.	DESCRIPTION	DATE
1	Revision 1	05-24-24

LEVEL 3 OVERALL DEMOLITION PLAN - POWER

ED3.03

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1 ROOF OVERALL DEMOLITION PLAN - POWER

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

GENERAL NOTES:

A. THE ELECTRICAL CONTRACTOR SHALL PERFORM ALL RELATE DEMOLITION MODIFICATIONS, RELOCATION AND ROUTING WORK NECESSARY TO COMPLETE THE PROJECT.

B. THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS AND DIMENSIONS PRIOR TO SUBMITTING BIDS. REFER TO ARCHITECTURAL, MECHANICAL AND PLUMBING WORK SHOWN ON OTHER DRAWINGS AND VISIT THE SITE TO DETERMINE THE EXTENT OF THE DEMOLITION AND NEW WORK REQUIRED.

C. THE ELECTRICAL CONTRACTOR SHALL NOT DISCONNECT EQUIPMENT AND ELECTRICAL CIRCUITS IN THE RENOVATION AREA OR ANY PART OF THE BUILDING WITHOUT PRIOR NOTIFICATION AND PERMISSION FROM THE OWNER. EXTREME CARE SHALL BE TAKEN TO MINIMIZE DISTURBANCE TO THE SURROUNDING AREA.

D. ITEMS REMOVED AND NOT INDICATED FOR RELOCATION SHALL BE OFFERED TO THE OWNER. AT THE OWNER'S DIRECTION, CONTRACTOR SHALL DISPOSE OF THE MATERIAL FROM THE SITE IN ACCORDANCE WITH EPA REGULATIONS OR DELIVER ITEMS TO A DESIGNATED LOCATION FOR OWNER STORAGE.

E. IN ANY CASE WHERE WORK INCLUDES REMOVAL OF A PORTION OF THE SYSTEM, THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY MATERIALS, EQUIPMENT AND LABOR TO SUSTAIN OPERATION OF ALL PARTS OF THE SYSTEMS CONNECTING TO OR FROM THE PORTION REMOVED AND COMPLETE ALL WORK IN ACCORDANCE WITH APPLICABLE CODES.

F. ALL WIRING AND CABLES CONNECTED TO DEVICES AND EQUIPMENT TO BE DEMOLISHED SHALL BE REMOVED BACK TO THEIR SOURCE. UNLESS OTHERWISE NOTED, CONDUITS AND/OR WIRING SHALL BE RECIRCUITED AROUND THE REMOVED PORTION, KEEPING OCCUPIED PARTS OF THE BUILDING SYSTEM IN FULL SERVICE.

G. ALL EXISTING CONDUIT WHICH HAS BEEN ABANDONED SHALL BE REMOVED.

H. THE ELECTRICAL CONTRACTOR SHALL MAINTAIN CONTINUITY OF CIRCUITS TO REMAINING FIXTURES OR DEVICES WHEN REMOVING A FIXTURE OR DEVICE FROM A CIRCUIT THAT SERVES OTHER FIXTURES OR DEVICES THAT ARE TO REMAIN.

I. THE ELECTRICAL CONTRACTOR SHALL PROVIDE UPDATED TYPED PANEL DIRECTORIES FOR ALL PANELS AFFECTED BY THE DEMOLITION AND/OR NEW WORK. CIRCUIT BREAKERS NOT USED FOR NEW WORK SHALL BE LABELED AS "SPARE".

J. THE ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY LIGHTING AND POWER AS REQUIRED.

K. DEVICES IN HATCHED AREA ARE NOT IN SCOPE OF WORK AND ARE EXISTING TO REMAIN UNLESS OTHERWISE NOTED.

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Project No. 221000

Revisions

NO.	DESCRIPTION	DATE

ROOF OVERALL DEMOLITION PLAN - POWER

ED3.04

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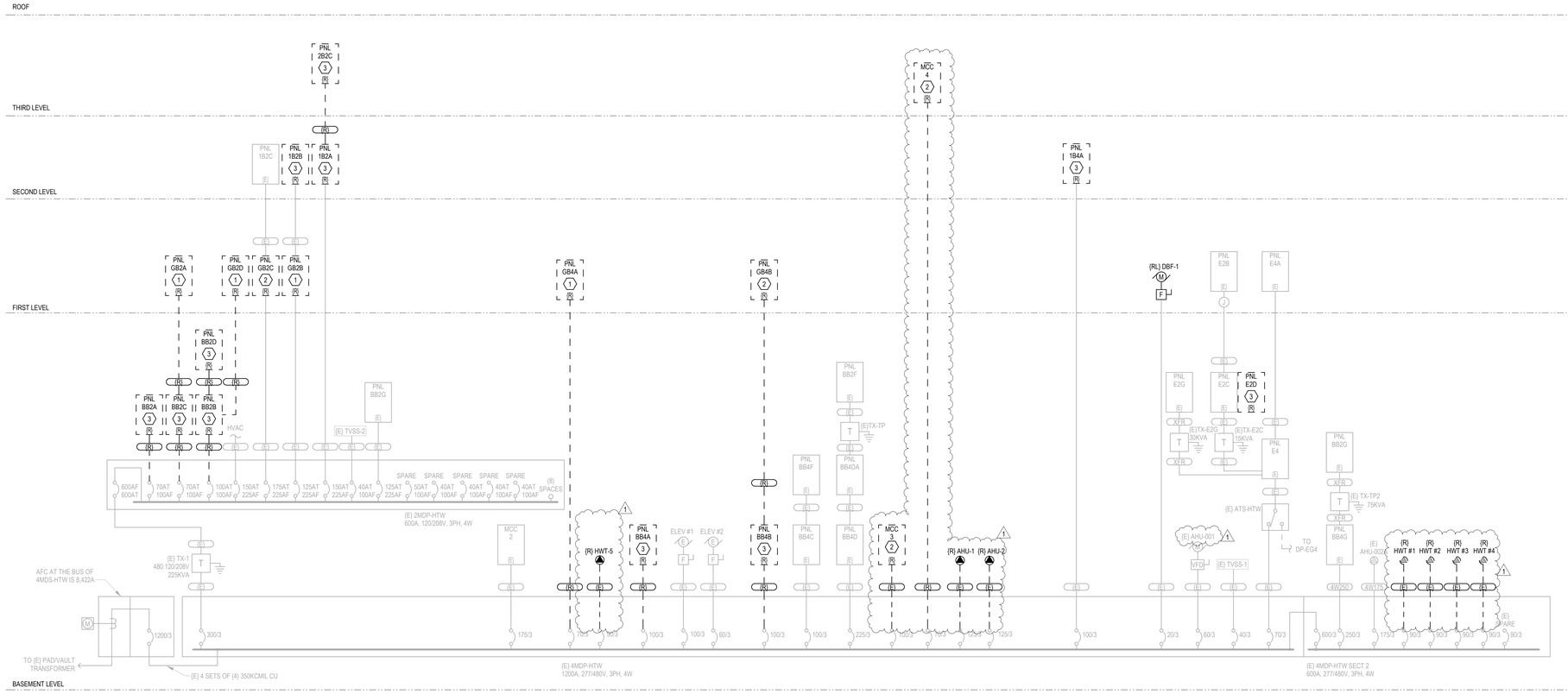
GENERAL NOTES

A. INFORMATION SHOWN IS BASED ON AS-BUILT DRAWINGS PROVIDED AND REQUIRES FIELD VERIFICATION.

B. MATCH FAULT CURRENT RATING OF NEW BREAKERS WITH EXISTING EQUIPMENT.

KEYED NOTES (#)

1. EXISTING LOADS FED FROM PANEL TO BE REMOVED DURING DEMO PHASE OF WORK. RECONNECT TO NEW PANEL IN NEW LOCATION DURING NEW PHASE OF WORK.
2. EXISTING PANEL TO BE REMOVED. DEMO WIRING BACK TO SOURCE AND LABEL BREAKER 'SPARE'.
3. EXISTING LOADS FED FROM PANEL TO BE DISCONNECTED DURING DEMO PHASE OF WORK. RECONNECT TO NEW PANEL IN EXISTING LOCATION DURING NEW PHASE OF WORK.



1 DEMO SINGLE LINE DIAGRAM

SCALE: NTS

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Project No. 221000

Revisions

NO.	DESCRIPTION	DATE
1	Revision 1	05-24-24

DEMO SINGLE LINE DIAGRAM

ED5.00

WALT ALLEN

COLUMN & FOOTING SCHEDULE SECTOR A

		A5	A5A	A5B	A6	A7	A8	A9	B5	B5A	B5B	B6	B7	B8	B9	C5	C5A	C5B	C6	C7	C8	C9	D5	D5A	D5B	D6	D7	D8	D9	E5	E5A	E5B	E6	E7	E8	E9	A1-5	D1-5
ROOF	SIZE	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24			24x24	24x24	24x24	24x24	24x24			24x24	24x24	24x24	24x24	24x24			24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24		
	CORE	17x20	20x20	20x20	17x20	20x20	20x20	20x20	14WF61			14WF211	20x20	20x20	14WF246	14WF246			14WF184	20x20	14WF184	20x20	14WF184			14WF211	20x20	20x20	20x20	17x20	20x20	17x20	20x20	20x20	20x20	20x20		
	VERTS.	4#11	4#11	4#11	4#11	4#11	4#11	4#11	4#6 & 4#11			4#6 & 4#11	4#11	4#11	4#11	4#6 & 4#11			4#6 & 4#11	4#11	4#11	4#11	4#6 & 4#11			4#6 & 4#11	4#11	4#11	4#11	4#11	4#11	4#11	4#11	4#11	4#11	4#11		
	TIES	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@12			#3@12	#3@18	#3@18	#3@18	#3@12			#3@12	#3@18	#3@18	#3@18	#3@12			#3@12	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18		
	DETAIL	2½-2 (SIM)	1/S-2	1/S-2	3½-2 (SIM)	1/S-2	1/S-2	1/S-2	11/S-2			11/S-2	1/S-2	1/S-2	1/S-2	11/S-2			11/S-2	1/S-2	1/S-2	1/S-2	11/S-2			11/S-2	1/S-2	1/S-2	1/S-2	2½-2 (SIM)	1/S-2	1/S-2	2½-2 (SIM)	1/S-2	1/S-2	1/S-2		
2ND FL.	SIZE	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24			24x24	24x24	24x24	24x24	24x24			24x24	24x24	24x24	24x24	24x24			24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24		
	CORE	17x20	20x20	20x20	17x20	20x20	20x20	20x20	14WF61			14WF211	20x20	20x20	14WF246	14WF246			14WF184	20x20	14WF184	20x20	14WF184			14WF211	20x20	20x20	20x20	17x20	20x20	17x20	20x20	20x20	20x20	20x20		
	VERTS.	4#11	4#11	4#11	6#11	4#11	4#11	4#11	4#6 & 4#11			4#6 & 4#11	4#11	4#11	4#11	4#6 & 4#11			4#6 & 4#11	4#11	4#11	4#11	4#6 & 4#11			4#6 & 4#11	4#11	4#11	4#11	4#11	4#11	6#11	4#11	4#11	4#11	4#11		
	TIES	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@12			#3@12	#3@18	#3@18	#3@18	#3@12			#3@12	#3@18	#3@18	#3@18	#3@12			#3@12	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18		
	DETAIL	2½-2 (SIM)	1/S-2	1/S-2	2½/S-2	1/S-2	1/S-2	1/S-2	11/S-2			11/S-2	1/S-2	1/S-2	1/S-2	11/S-2			11/S-2	1/S-2	1/S-2	1/S-2	11/S-2			11/S-2	1/S-2	1/S-2	1/S-2	2½-2 (SIM)	1/S-2	1/S-2	2½/S-2	1/S-2	1/S-2	1/S-2		
1ST FL.	SIZE	24x24	24x24	24x24	24x24	24x24	24x24	24x24	30x30			30x30	30x30	30x30	30x30	24x24			24x24	24x24	24x24	24x24	24x30			24x24	24x24	24x24	30x30	24x24	24x24	24x24	24x24	24x24	24x24	24x24		
	CORE	17x20	20x20	20x20	17x20	20x20	20x20	20x20	14WF61			14WF211	20x20	20x20	14WF246	20x20			14WF184	20x20	14WF184	20x20	14WF184			14WF211	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20		
	VERTS.	4#11	4#11	4#11	8#11	6#18	8#14	8#11	8#9			8#10	8#18	8#18	8#11	8#9			4#11	8#18	8#14	8#11	8#9			4#11	6#14	8#10	6#14	4#11	6#11	4#11	6#11	6#14	8#10	6#14		
	TIES	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#5@15"			#3@18	#3@18	#3@18	#5@15	#3@12			#3@12	#5@15	#3@18	#3@18	#3@18			#5@15	#3@18	#3@18			#3@18	#3@18	#3@18	#3@18	#3@18			
	DETAIL	2½-2 (SIM)	1/S-2	1/S-2	2½/S-2	2/S-2	2/S-2	2/S-2	10/S-2			9/S-2	2/S-2	2/S-2	2/S-2	10/S-2	2½-2	2½-2	9/S-2	2/S-2	2/S-2	2/S-2	10/S-2			1½-2	1½-2	9/S-2	2/S-2	2/S-2	1/S-2	3/S-2	3/S-2	3/S-2	3/S-2	3/S-2		
GR. FL.	SIZE	24x24	24x24	24x24	24x24				24x30	24x24		30x30																										
	CORE	20x20	20x20	20x20	20x20				14WF184	20x20		14WF211																										
	VERTS.	4#11	4#11	4#11	4#11				8#9	4#11		8#10																										
	TIES	#3@18	#3@18	#3@18	#3@18				#5@15	#3@18		#3@18																										
	DETAIL	1/S-2	1/S-2	1/S-2	1/S-2				10/S-2	1/S-2		9/S-2																										
FOOTING	DOWELS	4#11 x 6'-0"	4#11 x 6'-0"	4#11 x 6'-0"	4#11 x 6'-0"	8#18 x 8'-0"	8#18 x 8'-0"	8#11 x 6'-0"	8#9 x 6'-0"	4#11 x 6'-0"	4#11 x 6'-0"	8#11 x 6'-0"	8#18 x 8'-0"	8#18 x 8'-0"	8#11 x 6'-0"	8#9 x 6'-0"	4#11 x 6'-0"	4#11 x 6'-0"	8#11 x 6'-0"	8#18 x 8'-0"	8#14 x 7'-0"	8#11 x 6'-0"	8#9 x 6'-0"	4#11 x 6'-0"	4#11 x 6'-0"	8#9 x 6'-0"	8#14 x 7'-0"	8#10 x 6'-0"	4#11 x 6'-0"	4#11 x 6'-0"	6#11 x 6'-0"	6#11 x 6'-0"	8#10 x 6'-0"	4#11 x 6'-0"	4#11 x 6'-0"	6#18 x 6'-0"	6#6 x 6'-0"	
	TOP: CAP OR CAISSON	607'-0"	607'-0"	607'-0"	607'-0"	621'-0"	621'-0"	621'-0"	607'-0"	607'-0"	607'-0"	607'-0"	617'-6"	617'-4"	621'-0"	619'-6"	619'-6"	619'-0"	616'-0"	616'-0"	621'-0"	621'-0"	619'-6"	621'-0"	621'-0"	621'-0"	621'-0"	621'-0"	~~631'-0"~~ 631'-0"	613'-0"	621'-0"	621'-0"	621'-0"	621'-0"	~~631'-0"~~ 631'-0"	631'-0"	607'-0"	619'-6"
	TOP OF PILING												617'-6"																								
	BTM: PILE OR CAISSON	590'-0"	590'-0"	584'-0"	583'-0"	572'-0"	567'-0"	576'-0"	590'-0"	590'-0"	588'-0"	584'-0"	591'-0"	587'-0"	517'-6"	592'-0"	591'-0"	585'-0"	581'-0"	586'-0"	584'-0"	581'-0"	591'-0"	580'-0"	581'-0"	585'-0"	586'-0"	584'-0"	591'-0"	586'-0"	584'-0"	586'-0"	585'-0"	578'-0"	577'-0"	592'-0"	591'-0"	581'-0"
	TYPE OF PILING	BC/7	BC/9	BC/9	BC/10	BC/11	SC/4	SC/3	BC/11	BC/5	BC/5	BC/13	BC/11	SC/4	FP/12	BC/10	BC/6	BC/6	BC/12	BC/12	SC/4	SC/2	BC/10	BC/6	BC/6	BC/11	BC/11	BC/11	BC/10	SC/1	BC/7	BC/7	BC/9	BC/10	SC/3	SC/2	BC/6	BC/7
	DIA. OF BELL	1'	9'	9'	10'	11'			11'	5'	5'	13'	11'			10'	6'	6'	11'	12'			10'	6'	6'	11'	11'	11'	10'	7'	7'	7'	9'	10'			6'	7'
	NO. OF PILING								12																												
	DETAIL	2/S-3	2/S-3	2/S-3	2/S-3	2/S-3	3/S-3	3/S-3	2/S-3	2/S-3	2/S-3	2/S-3	2/S-3	3/S-3	2½/S-2 ½/S-3	2/S-3	2/S-3	2/S-3	2/S-3	2/S-3	3/S-3	3/S-3	2/S-3	2/S-3	2/S-3	2/S-3	2/S-3	2/S-3	3/S-3	2/S-3	2/S-3	2/S-3	2/S-3	3/S-3	3/S-3	2/S-3	2/S-3	

COLUMN & FOOTING SCHEDULE SECTOR B

		A1	A2	A2A	A3	A3A	A4	B1	B1-1	B2	B3	B4	C1	C1-1	C2	C3	C4	D1	D2	D3	D4	E1	E2	E2A	E3	E3A	E4	4E-1A	D1-1A	D-1A	C1-1A	B1-1A	B-1A	A1-1A	A-1A	A-4A	A1-2A	A1-3B	A1-3C	A1-4A	E-4A	D1-4A
ROOF	SIZE	24x24	24x14	24x14	24x14	24x14	24x14	24x24	24x24			24x24	24x24	24x24			24x24	20x24			24x24	20x24	24x14	24x14	24x14	24x14	24x14														
	CORE	20x20	20x10	20x10	20x10	20x10	20x10	20x20	20x20			20x20	20x20	20x20			20x20	20x20			20x20	20x20	20x10	20x10	20x10	20x10	20x10														
	VERTS.	4#11	SAME	SAME	SAME	SAME	10#10	SAME	SAME			4#11	SAME	SAME			8#11	4#11			4#11	SAME	6#9	SAME	SAME	SAME	10#10														
	TIES	#3@18	#3@14	#3@14	#3@14	#3@14	#3@14	#3@18	#3@18			#3@12	#3@18	#3@18			#3@18	#3@18			#3@18	#3@18	#3@14	#3@14	#3@14	#3@14	#3@14														
	DETAIL	1/S-2	3/S-2	3/S-2	3/S-2	3/S-2	5/S-2	1/S-2	1/S-2			1/S-2	1/S-2	1/S-2			4/S-2	1/S-2			1/S-2	1/S-2	3/S-2	3/S-2	3/S-2	3/S-2	5/S-2														
2ND FL.	SIZE	24x24	24x14	24x14	24x14	24x14	24x14	24x24	24x24			24x24	24x24	24x24			24x24	24x24			24x24	24x24	24x14	24x14	24x14	24x14	24x14														
	CORE	20x20	20x10	20x10	20x10	20x10	20x10	20x20	20x20			20x20	20x20	60x20			20x20	20x20			20x20	60x20	20x10	20x10	20x10	20x10	20x10														
	VERTS.	4#11	6#9	6#9	6#9	10#10	4#11	4#11				4#14	4#11	4#11			8#11	4#11			4#14	4#11	10#9	6#9	6#9	10#11															
	TIES	#3@18	#3@14	#3@14	#3@14	#3@14	#3@14	#3@18	#3@18			#3@18	#3@18	#3@18			#3@18	#3@18			#3@18	#3@18	#3@14	#3@14	#3@14	#3@14	#3@14														
	DETAIL	1/S-2	3/S-2	3/S-2	3/S-2	3/S-2	5/S-2	1/S-2	1/S-2			1/S-2	1/S-2	1/S-2			4/S-2	1/S-2			1/S-2	1/S-2	5/S-2	3/S-2	3/S-2	3/S-2	5/S-2														
1ST FL.	SIZE	24x24	24x14	24x14	24x14	24x14	24x14	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x14	24x14	24x14	24x14	24x21		12x24	12x24	12x24	12x24									
	CORE	20x20	20x10	20x10	20x10	20x10	20x10	20x20	20x20	20x24	20x24	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x10	20x10	20x10	20x10	20x20		8x20	8x20	8x20	12x24									
	VERTS.	4#11	10#9	SAME	SAME	SAME	SAME	6#11	6#11	6#8	6#8	6#18	6#11	6#11	6#8	6#8	8#11	6#11	6#8	6#8	6#18	8#11	10#10	6#10	6#10	6#10	8#18			SAME	SAME	SAME										
	TIES	#3@18	#3@14	#3@14	#3@14	#3@14	#3@14	#3@18	#3@18	3/8@24	3/8@21/2	#3@18	#3@18	#3@18	3/8@13/4	3/8@13/4	#3@18	#3@18	3/8@21/2	3/8@13/4	#3@18	#3@18	#3@14	#3@14	#3@14	#3@14	#3@18			#3@12	#3@12	#3@12									
	DETAIL	1/S-2	5/S-2	5/S-2	5/S-2	5/S-2	5/S-2	3/S-2	3/S-2	6/S-2	6/S-2	3/S-2	3/S-2	3/S-2	6/S-2	6/S-2	4/S-2	3/S-2	6/S-2	6/S-2	3/S-2	2/S-2	5/S-2	3/S-2	3/S-2	3/S-2	2/S-2			8/S-2	8/S-2	8/S-2									
GR. FL.	SIZE	24x24	24x14	24x14	24x14	24x14	24x14	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x14	24x14	24x14	24x14	24x24		12x24	12x24	12x24	18x18									
	CORE	20x20	20x10	20x10	20x10	20x10	20x10	20x20	20x20	20 ϕ	20 ϕ	20x20	20x20	20x20	20 ϕ	20 ϕ	20x20	20x20	20 ϕ	20 ϕ	20x20	20x20	20x10	20x10	20x10	20x10	20x20		8x20	8x20	8x20	14x18									
	VERTS.	4#11	10#11	10#11	10#11	10#11	10#14	8#11	8#11	6#10	6#8	8#18	8#11	8#11	6#10	6#11	8#14	8#11	6#10	6#11	8#18	8#14	10#11	6#11	6#11	6#11	8#18			6#9	6#10	6#9	4#9									
	TIES	#3@18	#3@14	#3@14	* 3@14	*3@14	#3@14	#3@18	#3@18	3/8@18	3/8@13/4	#3@18	#3@18	#3@18	3/8@13/4	3/8@13/4	#3@12	#3@18	3/8@13/4	3/8@13/4	#3@18	#3@18	#3@14	#3@14	#3@14	#3@14	#3@18			#3@12	#3@12	#3@12	#3@16									
	DETAIL	1/S-2	5/S-2	5/S-2	5/S-2	5/S-2	5/S-2	4/S-2	4/S-2	7/S-2	7/S-2	4/S-2	4/S-2	4/S-2	7/S-2	7/S-2	4/S-2	4/S-2	7/S-2	7/S-2	4/S-2	2/S-2	5/S-2	3/S-2	3/S-2	3/S-2	2/S-2			8/S-2	8/S-2	8/S-2	1/S-2									
FOOTING	DOWELS	4#11 x 6'-0"	10#11 x 6'-0"	10#11 x 6'-0"	10#11 x 6'-0"	10#11 x 6'-0"	10#14 x 7'-0"	8#11 x 6'-0"	8#11 x 6'-0"	6#10 x 6'-0"	6#8 x 5'-6"	8#18 x 8'-0"	8#11 x 6'-0"	8#11 x 6'-0"	6#10 x 6'-0"	6#11 x 6'-0"	8#14 x 7'-0"	8#11 x 6'-0"	6#10 x 6'-0"	6#11 x 6'-0"	8#18 x 8'-0"	8#14 x 7'-0"	10#11 x 6'-0"	6#11 x 6'-0"	6#11 x 6'-0"	6#11 x 6'-0"	8#18 x 8'-0"	14#6 x 5'-0"	8#5 x 5'-0"	6#9 x 5'-6"	6#10 x 6'-0"	6#10 x 6'-0"	6#9 x 5'-6"	4#9 x 5'-6"	8#8 x 6'-0"	8#6 x 5'-6"	6#8 x 6'-6"	6#8 x 6'-6"	6#8 x 6'-6"	6#8 x 5'-6"	8#8 x 5'-6"	6#8 x 6'-6"
	TOP: CAP OR CAISSON	599'-0"	599'-0"	599'-0"	599'-0"	602'-0"	607'-0"	599'-0"	599'-0"	602'-0"	602'-0"	602'-0"	602'-0"	604'-6"	602'-0"	607'-0"	607'-0"	607'-0"	607'-0"	607'-0"	607'-0"	607'-0"	607'-0"	607'-0"	607'-0"	607'-0"	607'-0"	607'-0"	607'-0"	607'-0"	607'-0"	602'-0"	602'-0"	599'-0"	599'-0"	599'-0"	607'-0"	599'-0"	602'-0"	602'-0"	607'-0"	613'-0"	613'-0"
	TOP OF PILING								603'-10"																																
	BTM: PILE OR CAISSON	560'-0"	518'-0"	575'-0"	518'-0"	584'-0"	585'-0"	595'-10"	595'-10"	590'-0"	590'-0"	589'-0"	518'-10"	511'-4"	503'-6"	592'-0"	590'-0"	513'-10"	570'-0"	585'-0"	586'-0"	513'-6"	513'-6"	623'-10"	567'-0"	557'-0"	582'-0"	511'-6"	511'-6"	520'-10"	601'-6"	516'-6"	513'-6"	512'-10"	560'-0"	591'-0"	555'-0"	585'-0"		591'-0"	583'-0"	581'-0"
	TYPE OF FTG.	SC/1	SC/1	SC/1	SC/1	BC/6	BC/8	FP/8	FP/6A	SC/3	SC/2	BC/10	FP/6A	FP/6A	FP/10	3C/2	8C/9	FP/8	3C/3	8C/10	BC/11	FP/10	FP/10	FP/7	SC/1	SC/1	SC/3	FP/5B	FP/4	FP/3	FP/5	FP/5	FP/5	FP/2	FP/3	SC/1	BC/7	3C/1	SC/1	BC/6	BC/8	SC/1	BC/7
	DIA. OF BELL				6'	8'						10'					9'	8'			10'	11'	10'	7'				6'	5'	3'	5'	2'	3'					6'	8'		7'
	NO. OF PILING							8	6				6	6	10	3C/2	9'	8										6	4	3	5	2	3									
	DETAIL	3/S-3	3/S-3	3/S-3	3/S-3	2/S-3	2/S-3	11/S-2 1/S-3	15/S-2 1/S-3	3/S-3	3/S-3	2/S-3	15/S-2 1/S-3	15/S-2 1/S-3	20/S-2 1/S-3	3/S-3	2/S-3	11/S-2 1/S-3	3/S-3	2/S-3	2/S-3	20/S-2 1/S-3	20/S-2 1/S-3	11/S-2 1/S-3	3/S-3	3/S-3	3/S-3	2/S-3	11/S-2 1/S-3	14/S-2 1/S-3	13/S-2 1/S-3	14/S-2 1/S-3	14/S-2 1/S-3	12/S-2 1/S-3	13/S-2 1/S-3	3/S-3	3/S-3	2/S-3	3/S-3	3/S-3	2/S-3	2/S-3	3/S-3	2/S-3

COLUMN & FOOTING SCHEDULE SECTOR C

		F1	F5	G1	G5	H1	H2	H2A H3	H4	H5	H3A	F1-5
ROOF	SIZE											
	CORE											
	VERTS.											
	TIES											
	DETAIL											
2ND FL. & ROOF OF SECTOR "C"	SIZE	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24
	CORE	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20
	VERTS.	SAME	SAME	SAME	SAME	SAME	SAME	SAME	SAME	SAME	SAME	SAME
	TIES	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#4@12	#3@18	#3@18	#4@12	#4@12
	DETAIL	1/S-2	5/S-2	1/S-2	5/S-2	1/S-2	1/S-2	4/S-2	1/S-2	1/S-2	4/S-2	4/S-2
1ST FL.	SIZE	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24
	CORE	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20
	VERTS.	4#11	SAME	4#11	SAME	4#11	4#11	8#14	8#14	4#11	8#14	8#11
	TIES	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#4@12	#3@18	#3@18	#4@12	#4@12
	DETAIL	1/S-2	5/S-2	1/S-2	5/S-2	1/S-2	1/S-2	4/S-2	4/S-2	1/S-2	4/S-2	4/S-2
GR. FL.	SIZE	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24	24x24
	CORE	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20	20x20
	VERTS.	4#11	10#14	4#11	10#14	8#10	8#14	8#14	8#14	8#10	8#14	8#14
	TIES	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18	#3@18
	DETAIL	1/S-2	5/S-2	1/S-2	5/S-2	2/S-2	4/S-2	4/S-2	4/S-2	2/S-2	4/S-2	4/S-2
FOOTING	DOWELS	4#11 x 6'-0"	10#14 x 7'-0"	4#11 x 6'-0"	10#14 x 7'-0"	8#10 x 6'-0"	8#14 x 7'-0"	8#14 x 7'-0"	8#14 x 7'-0"	8#10 x 6'-0"	8#14 x 7'-0"	4#11 x 5'-6"
	TOP: CAP OR CAISSON	607'-0"	613'-0"	607'-0"	613'-0"	607'-0"	607'-0"	607'-0"	607'-0"	613'-0"	607'-0"	
	TOP OF PILING	603'-10"					603'-10"	603'-10"				
	BTM: PILE OR CAISSON	523'-10"	570'-0"	512'-0"	575'-0"	585'-0"	523'-10"	523'-10"	592'-0"	581'-0"	575'-0"	
	TYPE OF FTG.	FP/3	SC/1	SC/1	SC/1	SC/1	FP/9	FP/3	SC/2	SC/1	SC/1	
	DIA. OF BELL											
	NO. OF PILING	3					9	3				
	DETAIL	13/S-2 3/S-3	3/S-3	3/S-3	3/S-3	3/S-3	14/S-2 3/S-3	13/S-2 3/S-3	3/S-3	3/S-3	3/S-3	

COLUMN SCHEDULE NOTES

1. WHERE THE WORD "SAME" APPEARS IN THE SCHEDULE THE VERTICAL REINF. SHALL BE A CONTINUATION OF THE VERT. REINF. FROM THE COLUMN BELOW WITH NO SPLICE (NS).
2. WF COLUMNS MAY BE SPLICED AT A POINT 2' ABOVE THE FIRST FLOOR PER DETAIL 23/S-2

COLUMN & FOOTING SCHEDULE FOR SECTOR C IS NOT IN BASIC BID - SEE ALTERNATE NO. 1

GENERAL NOTES

General

1. Foundation Design Loads:
   Caissons on Rock 16 KSF
   Caisson Rock Sockets 300 Tons (Max.)
   Friction Piling 50 Tons
   Spread Footings 2 KSF
   For additional subsurface information refer to "Subsurface Investigation" dated January 29, 1970, and "Additional Subsurface Investigation" dated April 24, 1970 for proposed Health Science Building, Portland Community College, S.W. Kerr Road, Portland, Oregon, prepared by Dames and Moore, consulting engineers.
2. Footing elevations shown on drawings are to the bottom of footing, except elevations shown in brackets ( ) are to top of caisson, grade beam or pile cap.
3. Verify all openings in walls and floors with Architectural, Mechanical and Electrical plans.
4. Refer to Architectural Drawings for general details and dimensions not shown.
5. Design Loads:
   Floors 100 PSF
   Roof 25 PSF
   Seismic UBC - Zone II
6. No excavation shall be made below any footing closer than a one to one slope to the bottom of same except in rock excavation.
7. Backfill all pipe & duct trench excavations, below footings, with concrete.

Concrete

1. Stone concrete shall have the following minimum 28 day compressive strengths.

All columns except those that are an integral part of a wall	F'c=5000 psi
Walls & Columns on Lines A & E between Lines 2 & 4 inclusive from footing to first floor	F'c=5000 psi
All walls & columns in Sector A	F'c=5000 psi
East wall & columns in Sector C	F'c=4000 psi
All slabs, joists & beams	F'c=4000 psi
All other concrete	F'c=3000 psi

To determine compliance of concrete strengths with minimums as set forth herein, strengths of compression test cylinders will be interpreted in accordance with Section 504(c) of the ACI Standard No. 318-63.

Concrete (Cont'd)

2. Place concrete beams, joists & slabs in one continuous operation unless detailed otherwise.
3. Waffle Slabs:
   A. All dome forms shall be 30" x 30" x 14" unless noted otherwise.
   B. All joists shall be 8" wide between column Lines & 2'-8" wide on column Lines unless noted otherwise.
   C. Floor joists shall be 14" + 5" deep & roof joists 14" + 3" to 14" + 6" deep, unless noted otherwise.

Reinforcing

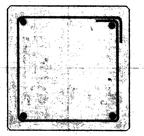
1. Reinforcing steel shall conform to ASTM A-15-68 of the following grades:
   All columns, beams & slabs Grade 60
   All other reinforcing including column ties & beam stirrups Grade 40
2. Unless detailed otherwise, reinforce all concrete walls as follows:

6" Wall	(W 6)	#4 @ 12" H & V Centered
8" Wall	(W 8)	#5 @ 15" H & V Centered
10" Wall	(W10)	#4 @ 16" H & V Each Face
12" Wall	(W12)	#4 @ 12" H & V Each Face
14" Wall	(W14)	#5 @ 18" H & V Each Face

3. Provide 2'-0" x 2'-0" corner bars for all horizontal wall reinforcement at all corners and intersections.
4. Where reinforcement is spliced, lap 30 diameters with 2'-0" min. unless detailed otherwise.
5. Unless otherwise noted, place 2-#6 over, 2-#5 under and 2-#5 each side of all wall openings; vertical bars story height + 2'-0" horizontal bars opening width + 2'-0" ea. end. Place 2-#6 in bottom of all walls. Place 2-#5 vertical at all discontinuous wall ends.
6. Unless otherwise noted, dowel vertical wall reinforcement into footing or grade beam with bars of same size and spacing.
7. Beam, joist or slab top reinforcing bars that terminate in a wall or column shall have standard 90° hook unless otherwise detailed. Beam, joist or slab bottom bars that terminate in a column or wall shall extend to within 2" of opposite face of column or wall unless detailed otherwise.
8. Where main slab reinforcement is parallel to beam or wall and except as otherwise shown place #4 x 5'-0" at 12" o.c. in top of slabs over beam or wall, alternate ends 1'-0". Where slab occurs on one side only, provide #4 @ 12" o.c.
9. Unless noted otherwise, provide shrinkage & temperature reinforcement in all slabs as follows:
   A. 6" Slab - #4 @ 18" at rt. angle to main reinf.
   B. 8" Slab - #4 @ 12" at rt. angle to main reinf.

Reinforcing (Cont'd)

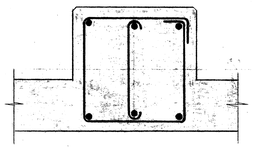
10. Provide carrier bars #5 @ 2'-0" o.c. max. spacing for all slab & wall reinforcing not supported by other transverse reinforcing.
11. Provide #5 stirrup carrier bars in all beams & joists containing stirrups where stirrups are not supported by reinforcing detailed or scheduled.
12. Waffle Slabs:
   A. In addition to bar reinforcement called for in schedule & details, provide 6 x 6-4/4 WWM tied to underside of top rebar over all



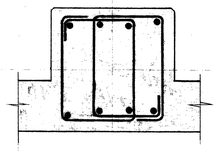
DETAIL 1 / 1"=1'-0" / S2



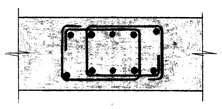
DETAIL 2 / 1"=1'-0" / S2



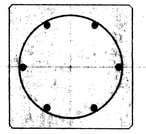
DETAIL 3 / 1"=1'-0" / S2



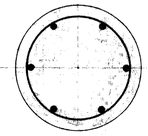
DETAIL 4 / 1"=1'-0" / S2



DETAIL 5 / 1"=1'-0" / S2



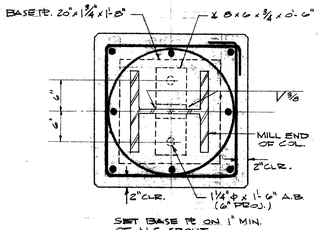
DETAIL 6 / 1"=1'-0" / S2



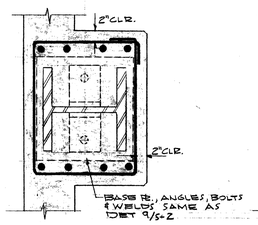
DETAIL 7 / 1"=1'-0" / S2



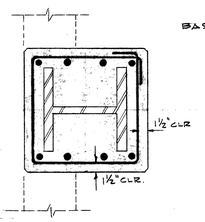
DETAIL 8 / 1"=1'-0" / S2



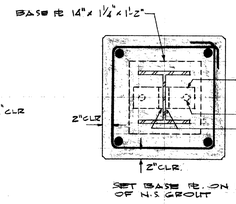
DETAIL 9 / 1"=1'-0" / S2



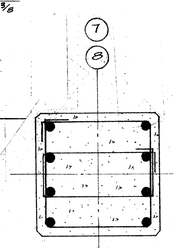
DETAIL 10 / 1"=1'-0" / S2



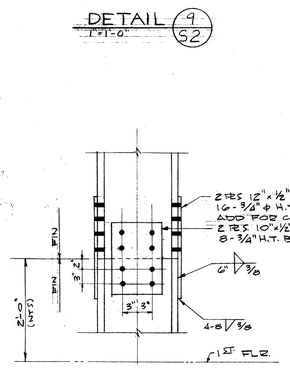
DETAIL 11 / 1"=1'-0" / S2



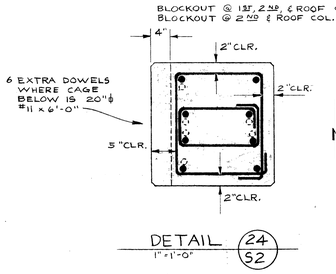
DETAIL 22 / 1"=1'-0" / S-2



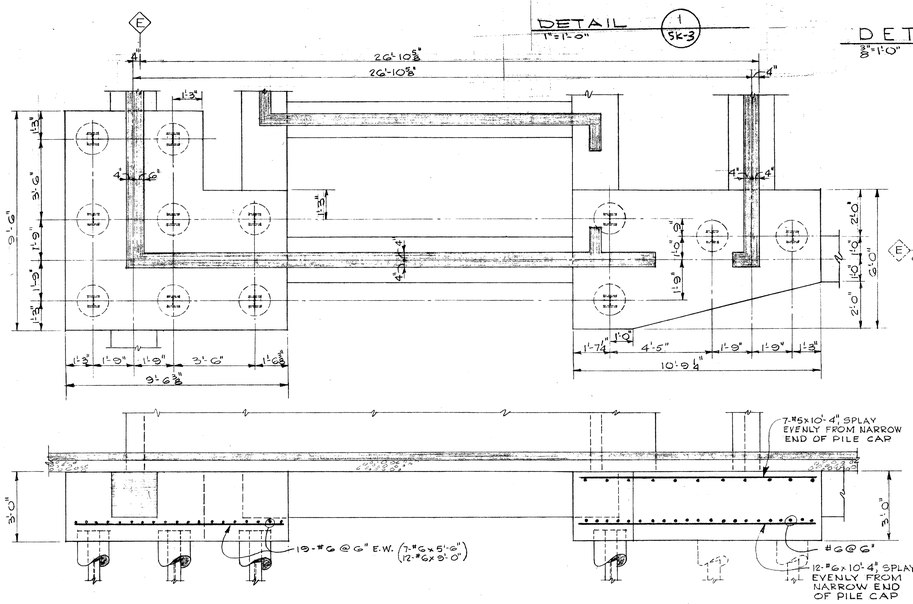
DETAIL 1 / 1"=1'-0" / S-3



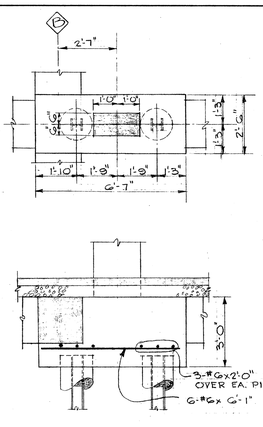
DETAIL 23 / S-2



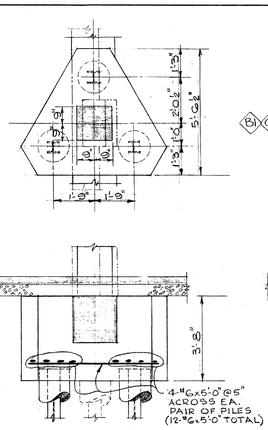
DETAIL 24 / 1"=1'-0" / S2



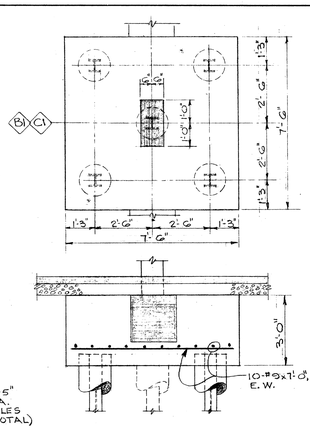
DETAIL 19 / 3/8"=1'-0" / S2



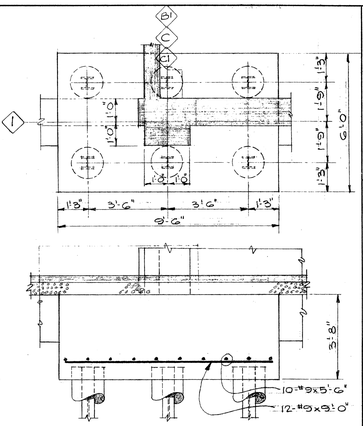
DETAIL 12 / 3/8"=1'-0" / S2



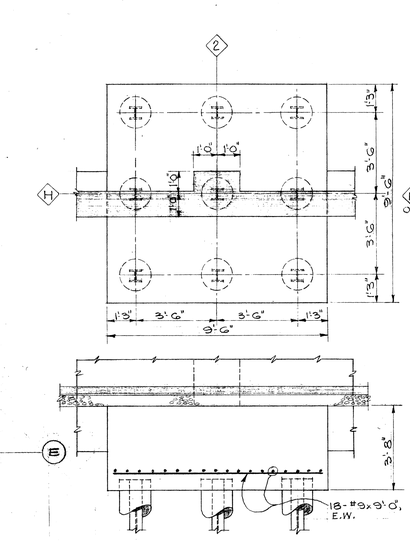
DETAIL 13 / 3/8"=1'-0" / S2



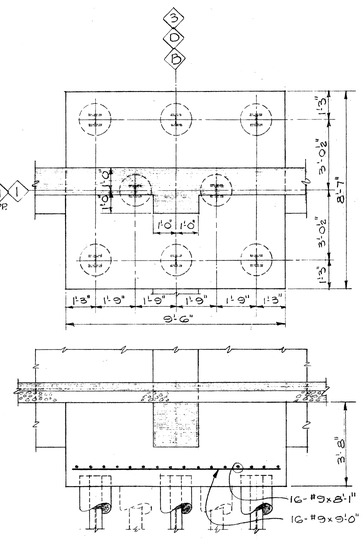
DETAIL 14 / 3/8"=1'-0" / S2



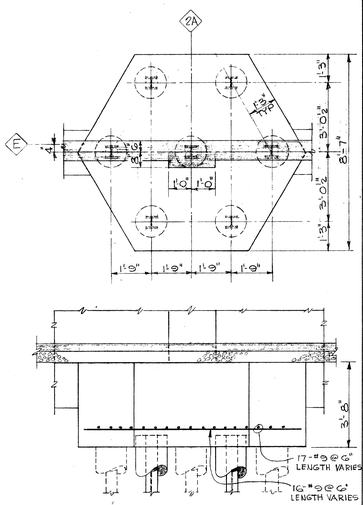
DETAIL 15 / 3/8"=1'-0" / S2



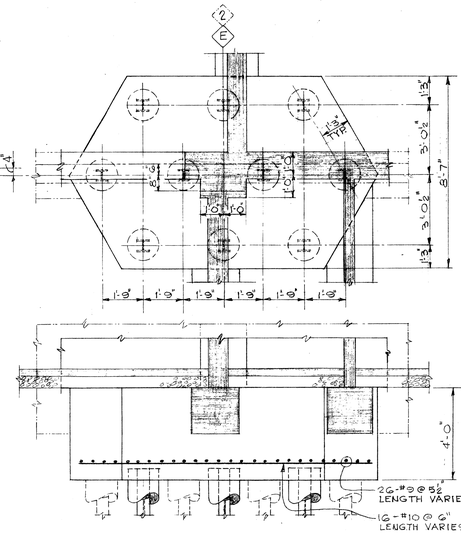
DETAIL 16 / 3/8"=1'-0" / S2



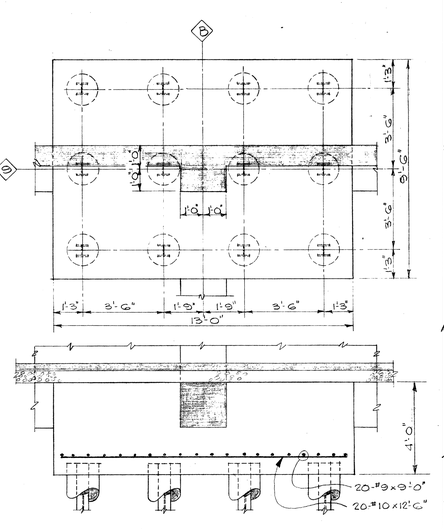
DETAIL 17 / 3/8"=1'-0" / S2



DETAIL 18 / 3/8"=1'-0" / S2



DETAIL 20 / 3/8"=1'-0" / S2



DETAIL 21 / 3/8"=1'-0" / S2

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FOUNDATION & COLUMN DETAILS

PHASE III - HEALTH SCIENCES BUILDING

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

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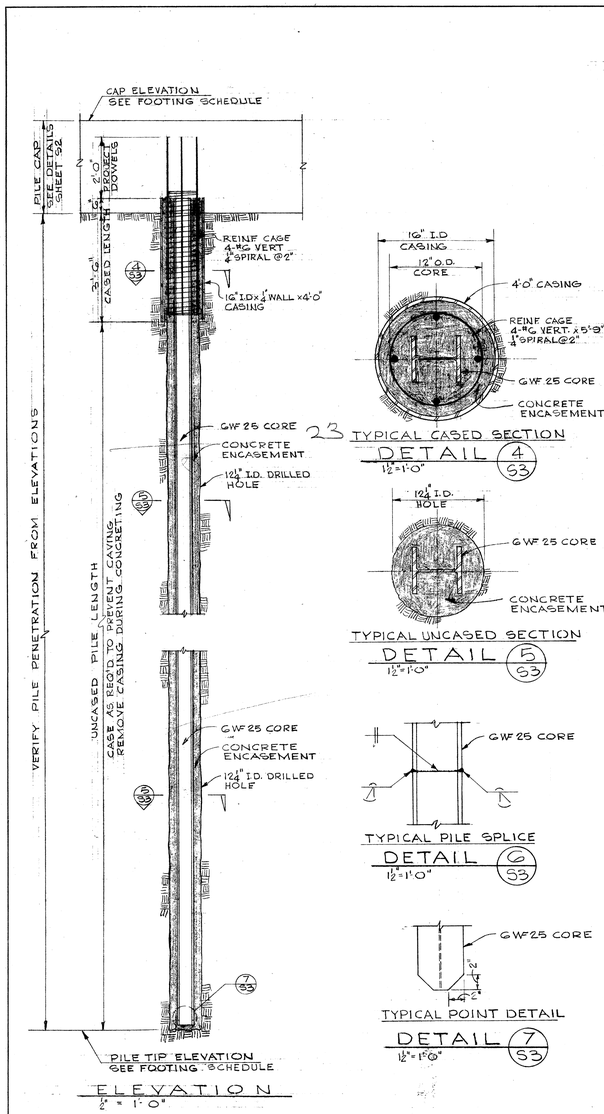
REVISIONS

JOB NO. 69-13-D

DATE JULY 1, 1970

OREGON

SHEET NO.
S-2



TYPICAL FRICTION PILE

DETAIL (1/S3)

TYPICAL CASED SECTION

DETAIL (4/S3)

½" = 1'-0"

TYPICAL UNCASED SECTION

DETAIL (5/S3)

½" = 1'-0"

TYPICAL PILE SPLICE

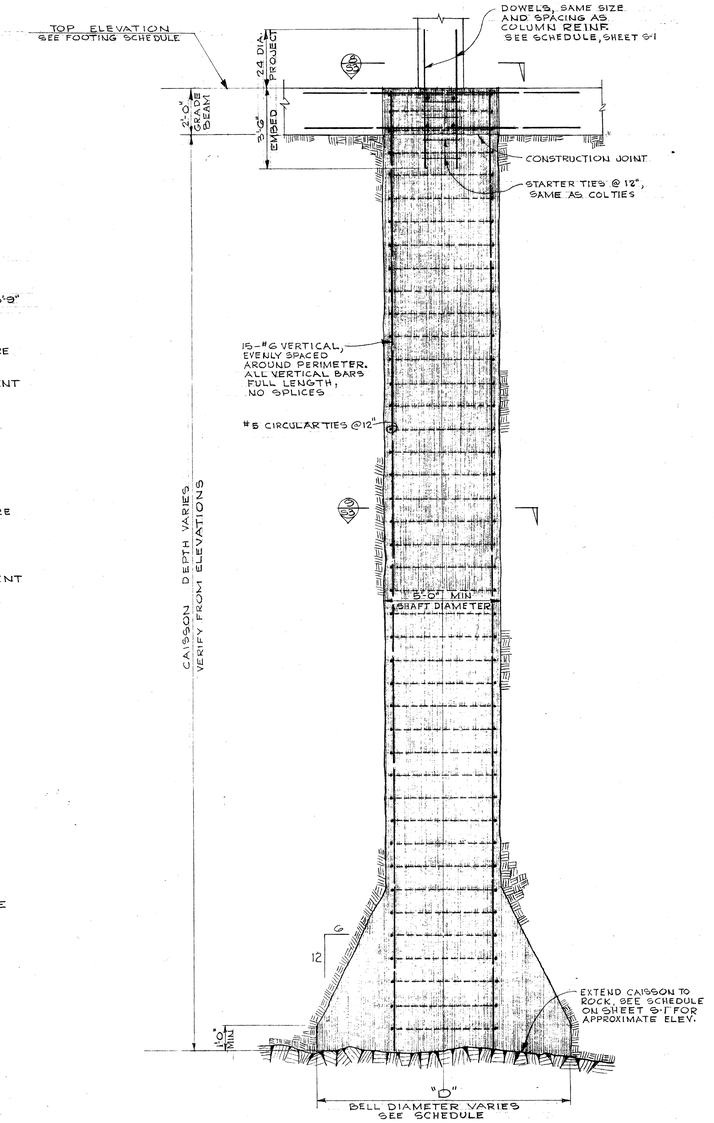
DETAIL (6/S3)

½" = 1'-0"

TYPICAL POINT DETAIL

DETAIL (7/S3)

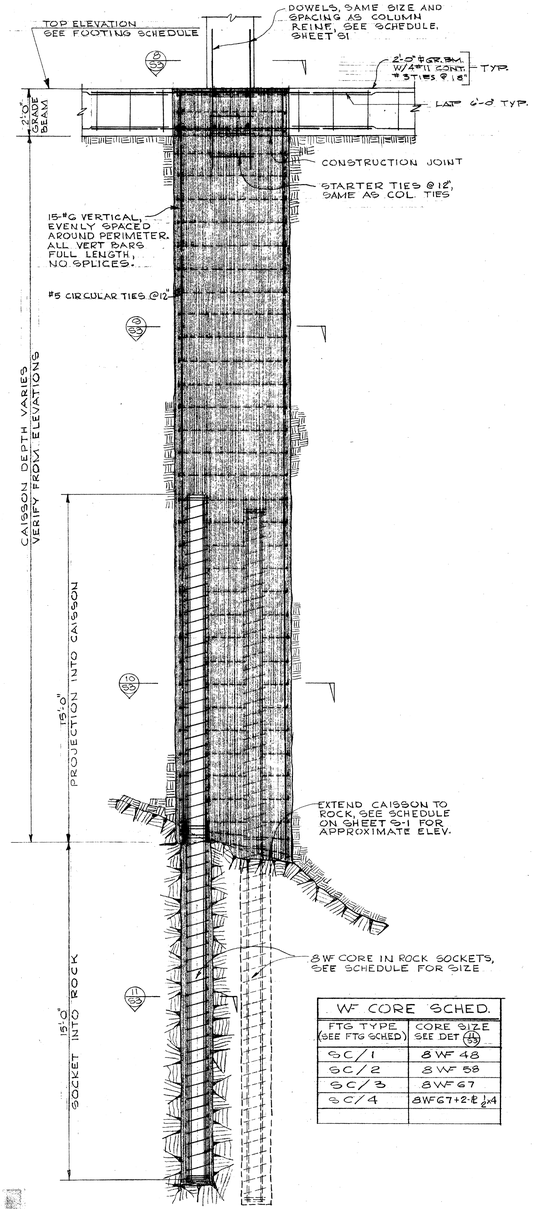
½" = 1'-0"



TYPICAL BELLED CAISSON

DETAIL (2/S3)

⅜" = 1'-0"

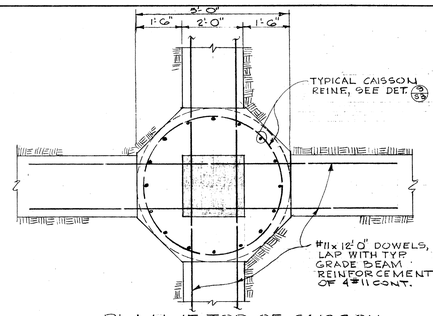


WF CORE SCHED.	
FTG TYPE (SEE FTG SCHED)	CORE SIZE SEE DET (11)
SC/1	8 WF 48
SC/2	8 WF 58
SC/3	8 WF 67
SC/4	8WF67+2-PL ¾x14

TYPICAL SOCKETED CAISSON

DETAIL (3/S3)

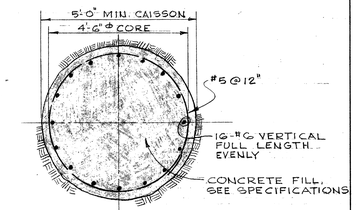
⅜" = 1'-0"



PLAN AT TOP OF CAISSON

DETAIL (8/S3)

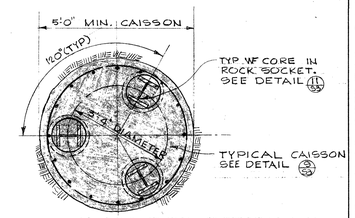
½" = 1'-0"



TYPICAL CAISSON SECTION

DETAIL (9/S3)

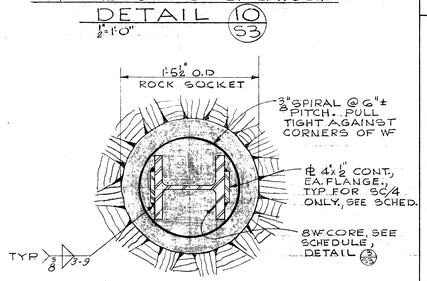
½" = 1'-0"



TYPICAL ROCK SOCKET LAYOUT

DETAIL (10/S3)

½" = 1'-0"



TYPICAL ROCK SOCKET

DETAIL (11/S3)

1½" = 1'-0"

CONCRETE REQUIREMENTS FOR ROUND COLUMNS

Expressed in cubic yards for columns of various heights

Diameter	Height of Column								
	1 Ft.	2 Ft.	3 Ft.	6 Ft.	8 Ft.	10 Ft.	12 Ft.	16 Ft.	20 Ft.
6"	.0073	.0146	.0219	.0438	.0584	.0730	.0876	.1168	.1460
8"	.0129	.0258	.0387	.0774	0.1032	0.129	0.155	0.206	0.258
10"	.0202	.0404	.0606	0.121	0.162	0.202	0.242	0.323	0.404
12"	.0291	.0582	.0873	0.176	0.233	0.291	0.349	0.466	0.582
14"	.0396	.0792	.1188	0.238	0.317	0.396	0.475	0.634	0.792
16"	.0517	.1034	.1551	0.310	0.414	0.517	0.620	0.827	1.034
18"	.0654	.1308	.1962	0.392	0.523	0.654	0.785	1.046	1.310
20"	.0808	.1616	.2424	0.485	0.646	0.808	0.970	1.293	1.616
22"	.0978	.1956	.2934	0.587	0.782	0.978	1.173	1.565	1.956
24"	.1164	.2328	.3492	0.698	0.931	1.164	1.397	1.862	2.328
26"	.1366	.2732	.4098	0.820	1.093	1.366	1.639	2.186	2.732
28"	.1584	.3168	.4752	0.950	1.270	1.584	1.901	2.534	3.170
30"	.1818	.3636	.5454	1.091	1.454	1.818	2.182	2.909	3.636
32"	.2069	.4138	.6207	1.241	1.655	2.069	2.483	3.310	4.138
34"	.2335	.4670	.7005	1.401	1.868	2.335	2.802	3.736	4.670
36"	.2618	.5236	.7854	1.571	2.094	2.618	3.142	4.189	5.236
38"	.2917	.5834	.8751	1.750	2.334	2.917	3.500	4.667	5.834
40"	.3232	.6464	.9696	1.939	2.586	3.232	3.878	5.171	6.464
42"	.3563	.7126	1.069	2.138	2.850	3.563	4.276	5.701	7.126
44"	.3911	.7822	1.173	2.347	3.120	3.911	4.693	6.258	7.822
46"	.4274	.8548	1.282	2.564	3.419	4.274	5.129	6.838	8.548
48"	.4654	.9308	1.396	2.792	3.723	4.654	5.585	7.446	9.308
60"	.7272	1.4544	2.1816	4.3632	5.8176	7.272	8.7264	11.6352	14.544
62"	.7524		2.2572			7.524			15.048

TYPICAL BELLED CAISSON

DETAIL (2/S3)

⅜" = 1'-0"

NOTES:

1. CAISSON SHAFTS SHALL BE CASED FULL LENGTH FOR PROTECTION OF WORKMEN. CASING SHALL BE EXTRACTED DURING PLACEMENT OF CONCRETE. SEE SPECIFICATIONS.
2. SEE SPECIFICATIONS FOR CONCRETE REQUIREMENTS
3. SEE SHEET S-1 FOR FOOTING SCHEDULE
4. SEE SHEET S-1 FOR GENERAL NOTES.

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JOB NO. 69-13 D | DATE JULY 1, 1970

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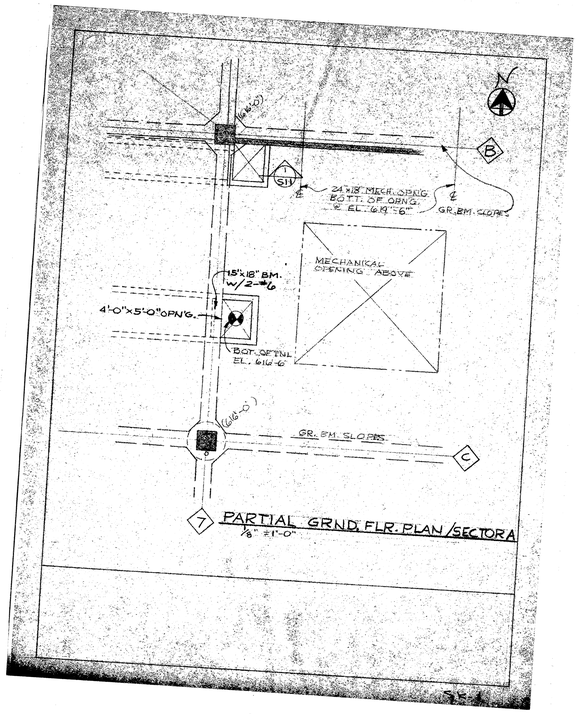
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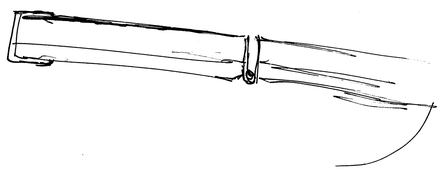
PHASE III - HEALTH SCIENCES BUILDING

FOUNDATION DETAILS

SHEET NO.
S-3



7 PARTIAL GRND. FLR. PLAN/SECTORA
1/8" = 1'-0"



FOUNDATION & GROUND FLOOR PLAN/SECTOR A

PHASE III - HEALTH SCIENCES BUILDING

PORTLAND COMMUNITY COLLEGE
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PORTLAND, OREGON

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH — ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET — PORTLAND, OREGON

JOB NO. 69-13D — DATE July 1, 1970

REVISIONS

SHEET NO. S-4

STAIR #4 Dwg. S-32 — STAIR #6 Dwg. S-22 — STAIR #5 — STAIR #2 Dwg. S-30

TOILET TOWER Dwg. S-33

SIDEWALK: 4" SLAB ON GRADE 6x6-6/6 WWM SEE ARCH. DWGS. FOR SCORING.

12" CONC. WALL #6 @ 8" VERT. 1 CLR SOUTH FACE #5 @ 12" HORIZ.

¼" EXP. JOINT FILLER — EXP. JT. — TYP.

TOP OF GR. BM. EL. 621'-0" — ½" STEP (TYP.)

FOR WAFFLE SLAB REINF. SEE GROUND FL. PLAN OF SECTOR B — EL. 622'-3½"

EL. 622'-6" — DEPRESS 2½"

BASE CONNECTION SIM. TO — TOP OF GR. BM. EL. 616'-0"

DEPRESS THIS AREA 2½"

NO FLOOR IN THIS AREA. SEE ARCH. DWGS. FOR FINISH GRADING

6" SLAB ON 6" MIN. COMPACTED SELECTED FILL. REINF. W/#5 @ 12" EW 1½" CLR. @ TOP

#6 @ 12" VERT. I.F. #4 @ 12" HORIZ. I.F. #4 @ 12" HRZ. O.F.

3'-0" x 1'-0" FTG. #4 @ 12" TRANS. 3#4 LONGIT.

2'-0" x 1'-0" FTG. 3#4 LONGIT. #4 @ 24" TRANS.

GR. BM. SLOPES — SLOPE ON GR.

EL. 619'-0" — 10'-0" ℄ ROOM — 10'-0"

24"-18" MECH. OPNG. BOTT. OF OPNG. @ EL. 619'-6"

ELEVATOR SEE S-30

4'-0" X 5'-0" OPENING

15" x 12" BM W/2-#6

MECHANICAL OPENING ABOVE

WALL REINF.: (TYP.) #6 @ 8" VERT. 1" CLR. I.F. #5 @ 12" HORIZ. @5 x 40'-0" ℄ #2 TIES @ 18" ℄ BTM. OF WALL (SIM. TO 3/S-13)

#5 x 10'-0" @ 12", 2" CLR. O.F. 5#4 VERT

NO C.J.

DETAIL 5/S-4

Concrete block is to be flush on future classroom side on line 7.

GR. BM. LEVEL 621

6" x 20'-0" ℄ #2 TIES @ 18" SIM. TO 3/S-13 EXCEPT @ TOP OF WALL

6" SLAB ON 6" MIN. COMPACTED SELECTED FILL. REINF. WITH #5 @ 12" E.W. 1½" CLR. OF TOP. EL. 622'-6"

6" SLAB ON 6" MIN. COMPACTED SELECTED FILL. REINF. WITH #5 @ 12" E.W. 1½" CLR. OF TOP. EL. 622'-3½"

6" SLAB ON 6" COMPACTED SELECTED FILL. REINF. WITH #5 @ 12" E.W. 1½" CLR. OF TOP.

EL. 622'-2¾"

ELEV. 622'-6"

WALL REINF.: (TYP.) #6 @ 8" VERT. 1" CLR. I.F. #5 @ 12" HORIZ. @9 x 40'-0" ℄ #2 TIES @ 18" ℄ BTM. OF WALL (SIM. TO 3/S-13)

2'-0" x 2'-0" GRADE BEAM W/4#11 & #3 TIES @ 18" (TYPICAL ALL GR. BMS.)

GR. BM. LEVEL 631'-0" — 631'-0" ADD — 631'-0"

TOP OF GR. BM. EL. 613'-0" — TOP OF GR. BM. EL. 619'-0"

FTG. 7'-4" x 13'-0" x 1'-0" ℄ EL. 616'-0" SEE SEC. 5/S-8

BOT. OF TNL. EL. 617'-0" — BOT. OF TNL. EL. 619'-6"

SECTION 1 / S4 — ½" = 1'-0"

GROUND FL. EL. 622'-6" — SELECTED BACKFILL — 10" — 2"

SECTION 2 / S4 — ½" = 1'-0"

STAIR #3 FTG SEE SHEET S-31

GRID LINE — VARIES — 2'-0"

SECTION 3 / S4 — ½" = 1'-0"

#5 x 2'-0" @ 15'

8" CONC. WALL — FUTURE FLR — GRADE BM.

CHANGE PER DRAWING No. SK-1 (ADDENDUM)

SECTION 5 / S-4 — ½" = 1'-0"

TYP TEMP. #5 — #5 x 39'-5" @ 12" — #5 x 9'-0" @ 12" — #4 x 13'-6" @ 15' TYP TEMP. — TOPPING NOT SHOWN TYP.

#5 x 13'-6" @ 10" — #5 x 14'-6" @ 10"

#5 @ 12" — 4'-6" — WB REINF. — BM REINF. SAME AS (10/S-34)

18'-2" — 2-#6

#5 @ 15" EA. WAY — 2" CLR.

WATER-STOP SEE SPEC. — 622'-6" — #3 @ 12" EA WAY — EXP. J. W/ WATER-STOP

2" NET x 5 NET KEY — 620'-0" — 3'-0" — 2'-0"

SECTION 6 / S-4 — ¼" = 1'-0"

STAIR #2 FTG. SEE SHEET S-31

25'-5"

SHEET NO. S-4 FOUNDATION AND GROUND FLOOR PLAN SECTOR A

Change elevations at caissons D9 and E8 from (621'-0") to (631'-0").

On Line E from 7 to 9: Grade beam level, top at 631'-0"
On Line D from 8 to 9: Grade beam level, top at 631'-0"
On Line C from 8 to 9: Grade beam level, top at 621'-0"
On Line 8 from D to E: Grade beam level, top at 631'-0"
On Line 9 from C to E: Grade beam level, top at 631'-0"

WHERE REQ'D FOR CONSTRUCTION: VERTICAL C.J. IN FIRST STORY OF ALL WALLS SHALL BE MADE MIDWAY BETWEEN COLUMNS. HORIZ. WALL REINF. SHALL BE SPLICED @ C.L. ONLY.

FLOOR ELEVATIONS SHOWN ARE TO TOP OF STRUCTURAL FLOOR. SEE ARCH. DWGS. FOR ELEVATIONS OF FINISH FLOOR

N — W — E — S

SECTOR B — SECTOR A — SECTOR C ALT. #1

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REGISTERED PROFESSIONAL ENGINEER 4326 — STATE OF OREGON — SAMUEL M. BURGSTAHLER

SHEET NO. S-4

FIRST FLOOR PLAN / SECTOR A

PHASE III - HEALTH SCIENCES BUILDING

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND, OREGON

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH — ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET — PORTLAND, OREGON

JOB NO. 69-13D
DATE JULY 1, 1970
REVISIONS

SHEET NO. S-5

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STRUCTURAL ENGINEERS
4504 S. W. CORBETT
PORTLAND, OREGON 97201

SECTION 1 / S-5 — 1/2" = 1'-0"

SECTION 2 / S-5 — 1/2" = 1'-0"

SECTION 3 / S-5 — 1/2" = 1'-0"

SECTION 4 / S-5 — 1/2" = 1'-0"

SHEET NO. S-5 MEN'S TOILET TOWER

Utility tunnel extends to inside wall of Men's Toilet Tower. See sheet No. 6 Ground Floor Plan, Sector A. Also detail 8/S.

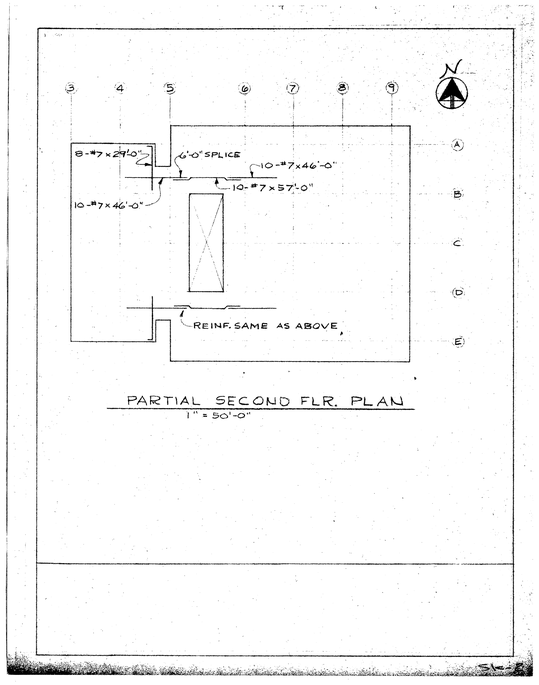
PLAN

Sleeve joists and beams at north end of Mall area for balcony drains.

NOTE: ELEVATIONS SHOWN ARE TO TOP OF STRUCTURAL FLOOR UNLESS OTHERWISE NOTED

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SHANNON & COMPANY



PARTIAL SECOND FLR. PLAN
1" = 50'-0"

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PHASE III - HEALTH SCIENCES BUILDING

SECOND FLOOR PLAN/SECTOR "A"

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JOB NO. 69-13D DATE JULY 1, 1970

REVISIONS

SHEET NO. S-6

SHEET NO. S-6 SECOND FLOOR PLAN

Sleeve joists and beams at north end of mail area for balcony drains.

Add: Reinforcement as shown on SK-1.

SECTOR A
SECTOR B
SECTOR A-C #1

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4504 S. W. CORBETT
PORTLAND, OREGON 97201

LOCKER BLOCK DWG. S-33

STAIR #2 DWG. S-31

STAIR #1 DWG. S-30

STAIR #5 DWG. S-32

STAIR #6 DWG. S-34

WOMEN'S TOILET TOWER DWG. S-33

MEN'S TOILET TOWER DWG. S-33

ELEVATOR SEE SHEET S-30

SLEEVE JOISTS FOR DRAINS (TYP.)

PRECAST MULLION (TYP.)

DOME PAN

TYP. 2-#7 ALL CRS

TYP. 2-#7 SHEAR BARS TYP. 2'-0"

DEPRESS THIS AREA 2½"

CANTILEVER END OF CANTILEVER JOISTS UP ½"

STEEL BEAM

OUTSIDE FACE OF JOIST

MATCH LINE

ROOF PLAN/SECTOR A

SKYLIGHT ROOF

1/8" = 1'-0"

SECTION 2

1/2" = 1'-0"

SECTION 3

1" = 1'-0"

REINF. TYP. 4 PLACES

⚠ ROOF OF STAIR #3 OMITTED

⚠ ROOF OF STAIR #2 OMITTED

STAIR #1 DWG. S-30

STAIR #4 DWG. S-32

STAIR #6 DWG. S-22

STAIR #8 DWG. S-24

MEN'S TOILET TOWER DWG. S-33

WOMEN'S TOILET TOWER DWG. S-33

PRECAST FACIA NOT SHOWN

EDGE OF JOIST

END OF BM.

END OF JOISTS

EL. VARIES 665'-9½" TO 666'-0½" SEE ARCH. ROOF PLAN

FOR FRAMING OF ROOF OVER SEE 1/S-7

SEE DWGS. S-8 & S-9

BM. MK. R-5A/B-C

BM. MK. R-5B/C-D

BM. MK. R-B/S-6

BM. MK. R-C/S-6

BM. MK. R-D/S-6

14"ø MECH. OPNG. W/CURB

4"ø MECH. OPNG. W/CURB

3½"x14" MECH. OPNG. W/CURB

6'-0"x10'-0" MECH. OPNG.

32"ø MECH. OPNG.

2-#7 SHEAR BARS TYP.

30"ø x 14" DOME PAN

5" POUR HOLES (TYP.)

5-#3 STIRR @ 9" EA END TYP.

9-#3 STIRR @ 9" FOR 26 JSTS

TYP STIRR.

2-#6 x 8'-0" DOWELS EA. JST. TYP.

DOWELS SEE S-5-9

DOWELS SAME AS S-5-9

2-#6 DOWELS EA JST. TYP.

5½"x16½" G/L COMB. A

2x4 NAILING STRIP

#4@16" EW

#4@16" ST. EW

#3 TIES @ 8"

#5 @ 10"

EL. 666'-2½"

EL. 665'-9½"

2-#5 W/STD HK @ TOP

2-#5 W/ 5'-6" HK @ TOP

2-#5 W/ 3'-6" HK @ TOP

C.J. THRU BY (5)

C.J. THRU BY (6)

DOWELS SAME #5-9

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N.E. GLISAN STREET PORTLAND, OREGON

REVISIONS
1 GENERAL REVISIONS 12-15-70

JOB NO. 69-13 D

DATE

PHASE III-HEALTH SCIENCES BUILDING

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

REGISTERED ARCHITECT
STATE OF OREGON

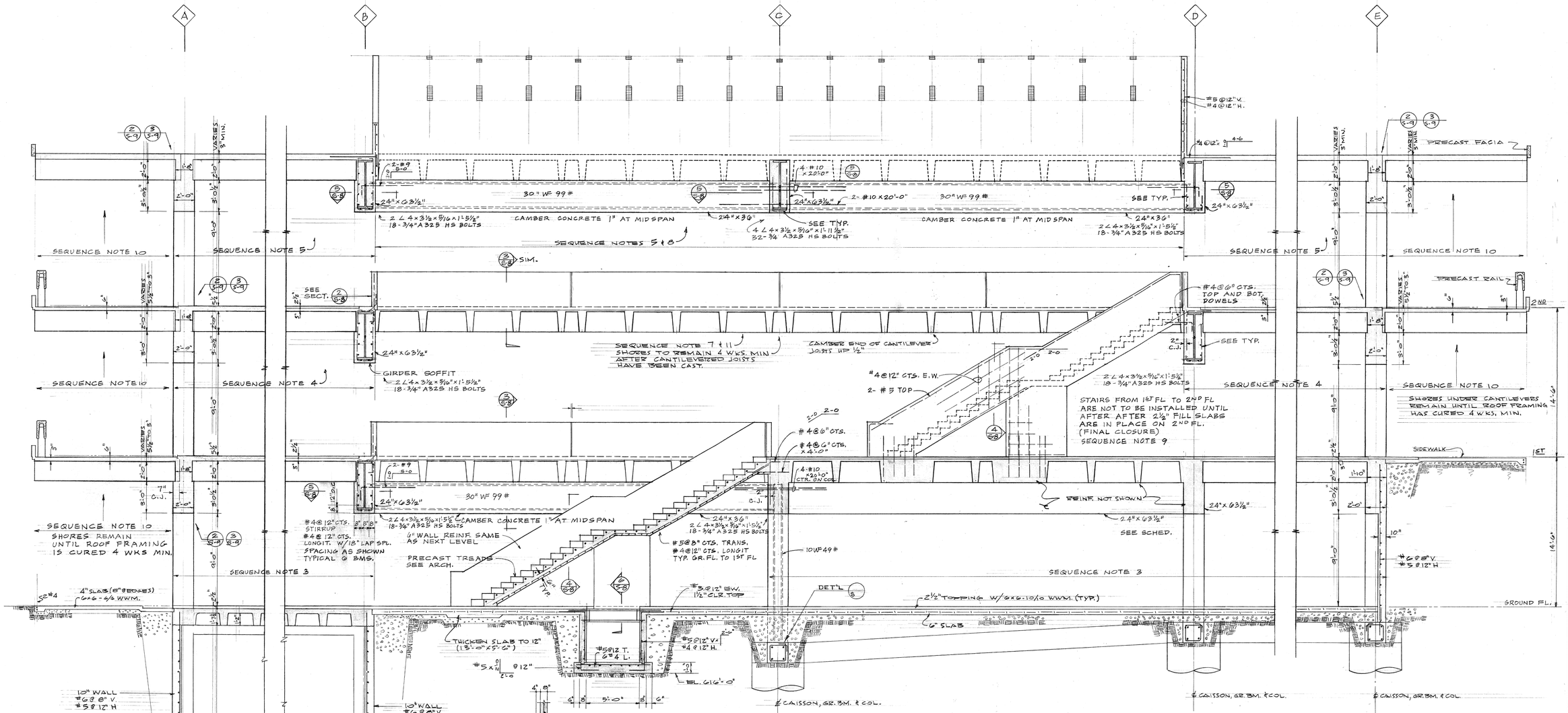
REGISTERED PROFESSIONAL ENGINEER
4326
OREGON
Dec. 24, 1918
SAMUEL M. HOLMES

SHEET NO.
S-7

C. V. BURGSTAHLER
STRUCTURAL ENGINEERS
4504 S. W. CORBETT
PORTLAND, OREGON 97201

SECTOR B | SECTOR A | SECTOR C ALT. #1

ANNON & COMPANY



SEQUENCE OF CONSTRUCTION FOR 60' WIDE MALL AREA

1. FRAMING BETWEEN LINES (5) AND (6) ABOVE GROUND FL. SHALL NOT BEGIN UNTIL SECTOR A FRAMING BETWEEN LINES (6) AND (7) INCLUSIVE AND SECTOR B FRAMING BETWEEN LINES (1) AND (5) INCLUSIVE COMPLETE THROUGH THE ROOF.
2. INSTALL STEEL FRAMING BETWEEN LINES (5) & (6)
3. CAST 1ST FL. INTERIOR FRAMING LINES (A) THRU (B) AND LINES (C) THRU (E)
4. CAST 2ND FL. FRAMING LINES (A) THRU (B) AND (D) THRU (E)
5. CAST ROOF FRAMING LINES (A) THRU (E) EXCEPT JOISTS BETWEEN (B) & (D)
6. CAST 1ST FL. FRAMING LINES (B) THRU (C)
7. CAST 2ND FL. FRAMING LINES (B) THRU (C) EXCEPT RAILING.
8. CAST SKYLIGHT WALLS TO DEFLECT BEAMS AT LINES (B), (C), (D) THEN CAST ROOF JOISTS BETWEEN (B) & (D)
9. CAST STAIRS 1ST FL. TO 2ND FL. AS NOTED IN 1/S-8
10. CAST EXTERIOR WALKWAYS @ 1ST, 2ND & ROOF AFTER ALL SHORING FOR INTERIOR FRAMING AT RESPECTIVE LEVELS HAS BEEN REMOVED.
11. CAST RAILING WALLS AT END OF CANTILEVERED JOISTS AFTER SHORING FOR JOISTS HAS BEEN REMOVED.

JOB NO. 69-13 D
DATE JULY 1, 1970
REVISIONS

SECTIONS & DETAILS/SECTOR A

PHASE III-HEALTH SCIENCES BUILDING

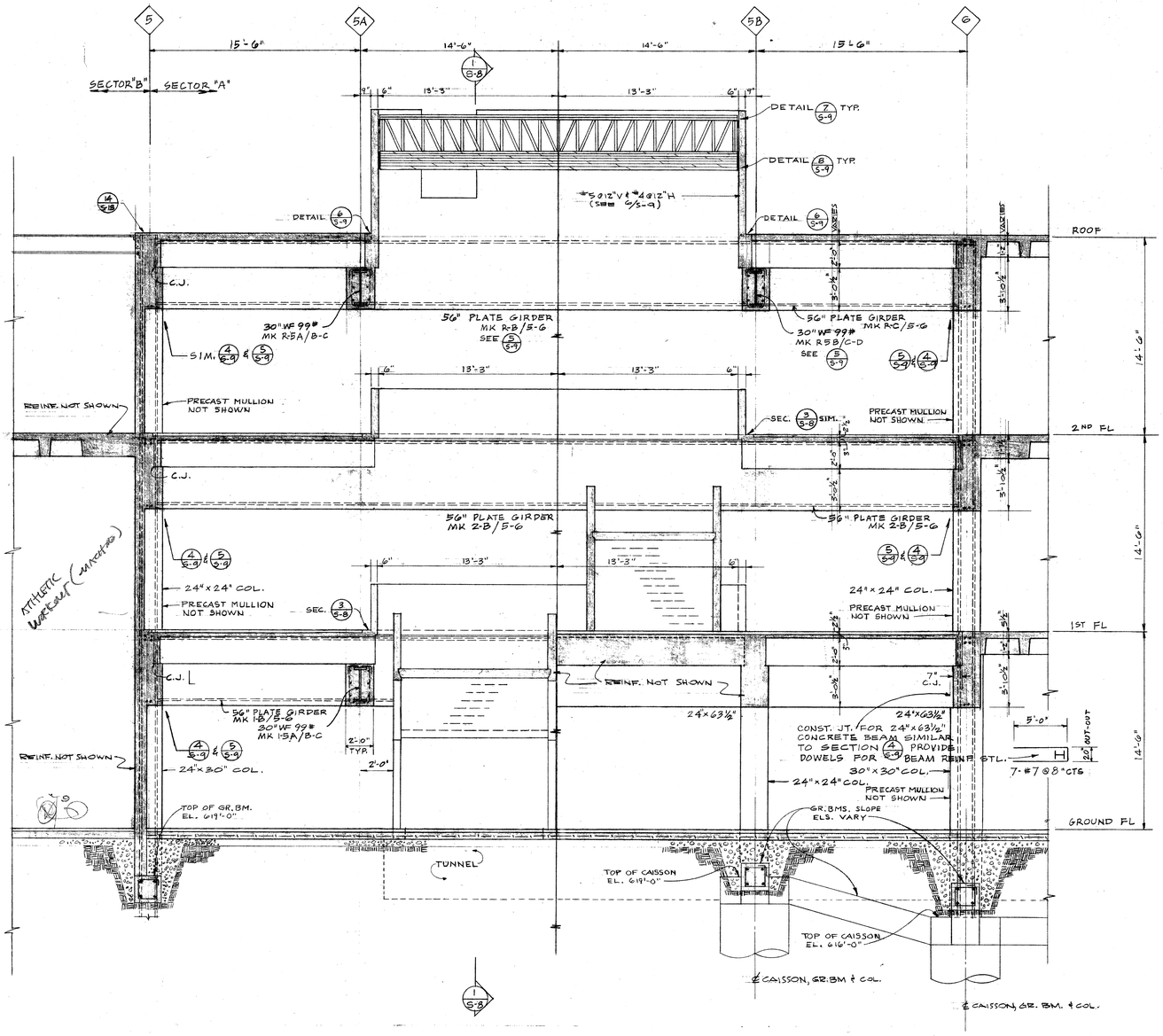
PORTLAND COMMUNITY COLLEGE
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PORTLAND OREGON

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5502 N.E. GLISAN STREET PORTLAND, OREGON

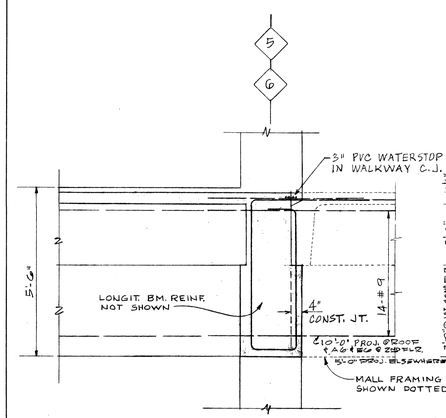
REGISTERED ARCHITECT PORTLAND, OREGON STATE OF OREGON

REGISTERED PROFESSIONAL ENGINEER OREGON 4926 JULY 24, 1970 SAMUEL M. HOLMES

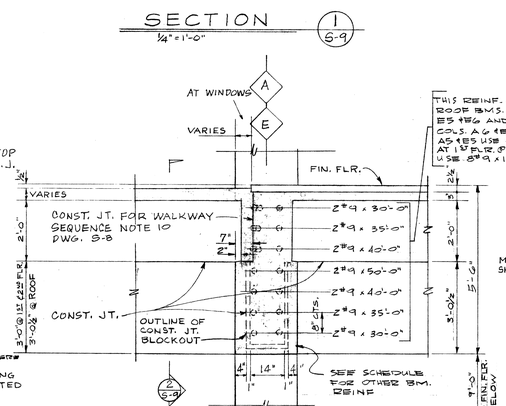
SHEET NO. S-8



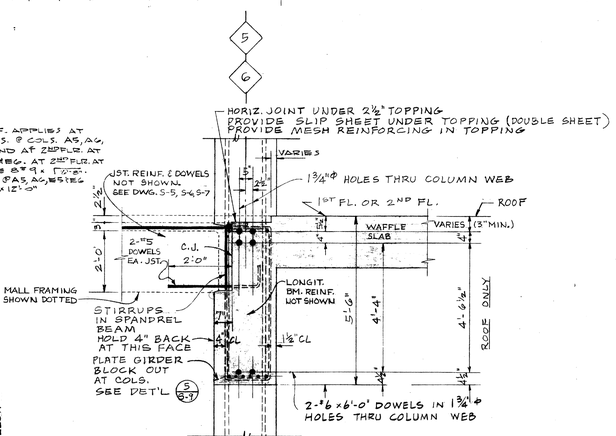
SECTION 1 5-9
1/4" = 1'-0"



SECTION 2 5-9
1/2" = 1'-0"

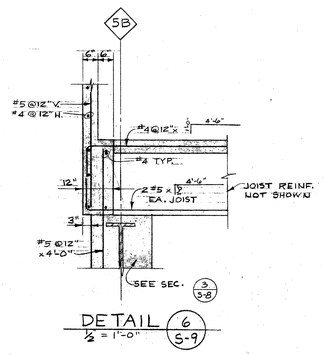


SECTION 3 5-9
1/2" = 1'-0"

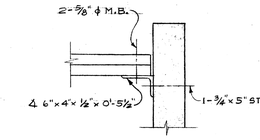


PROVIDE 7" CONST. JT. AS SHOWN FROM LINES B TO D
PROVIDE 4" CONST. JT. WHERE CHANNELS FRAME PARALLEL AT A TO B AND D TO E

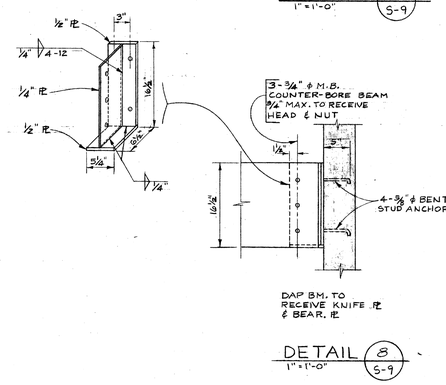
SECTION 4 5-9
½" = 1'-0"



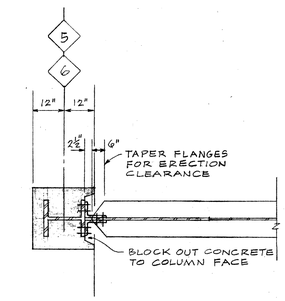
DETAIL 6 5-9
½" = 1'-0"

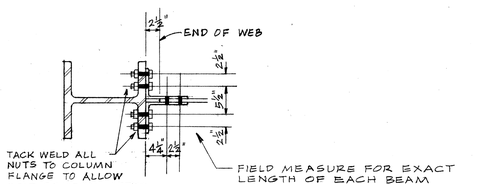


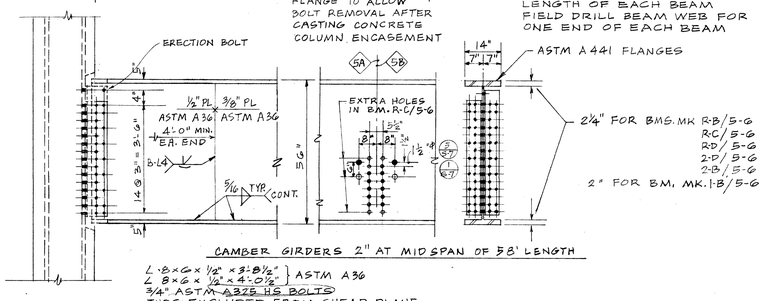
DETAIL 7 5-9
1" = 1'-0"



DETAIL 8 5-9
1" = 1'-0"







CAMBER GIRDERS 2" AT MIDSPAN OF 58' LENGTH

L 8"x6"x ½" x 3'-8½" } ASTM A36
L 8"x6"x ½" x 4'-0¾" }
¾" ϕ ASTM A325 HS BOLTS
THDS. EXCLUDED FROM SHEAR PLANE

TYPICAL PLATE GIRDER DETAILS 5 5-9

SHEET NO. S-5, SECTIONS AND DETAILS SECTOR A

SECTION 1 S-5.

Change 2 No. 6 x 6 -0" flowels to 4 No. 11 x 20'-0". Provide two additional holes in web of W2 columns, one each 6" above the bottom flange. Thru applies to lines 15, 17, D1, D6, C6, and E6.

L. V. BURGSTAHLER
STRUCTURAL ENGINEERS
4504 S. W. CORBETT
PORTLAND, OREGON 97201

PHASE II - HEALTH SCIENCES BUILDING
PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND, OREGON

JOB NO. 69-13D
DATE JULY 1, 1970
REVISIONS

SECTIONS & DETAILS/SECTOR A

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

REGISTERED PROFESSIONAL ENGINEER 4326 SAMUEL M. HOLMES OREGON
Samuel M. Holmes
OCT. 24, 1969

SHEET NO.
S-9

BEAM - JOIST - SLAB SCHEDULE / SECTOR "A"

FLOOR JOIST & SLAB SCHEDULE

MK	SIZE WIDTH	SIZE DEPTH	REINFORCING NO.	SIZE	TOP	BOTTOM	NOTES
1J-1	8"	14"+5½"	2	5	13'-0"		
1J-2			2	6	11'-0"		
1J-3			2	7	13'-0"		
1J-4			2	7		40'-0"	
1J-5			2	8		40'-0"	
1J-6			2	10		40'-0"	
1J-7			2	11		40'-0"	
1J-8			2	10		40'-0"	
1J-9			1	9	13'-6" | 12'-0" / 12'-0" | 13'-6"		
			1	9			
1J-10			2	8	10'-0" | 10'-0"		
1J-11			1	10	13'-6" | 12'-0" / 12'-0" | 13'-0"		
			1	10			
1J-12			2	6		39'-6"	
1J-13			2	6		30'-0"	
1J-14			2	8		39'-6"	
1J-15			1	7	13'-6" | 10'-0" / 10'-0" | 13'-6"		
			1	7			
1J-16			2	8	10'-0" | 10'-0"		
1S-1	21'-8"	14"+5½"	12	11	14'-6" | 12'-0" / 12'-0" | 14'-6"		
			11	11			
2J-1	8"	14"+5½"	2	7	13'-0"		
2J-2			2	6	11'-0"		
2J-3			2	8		40'-0"	
2J-4			2	10		40'-0"	
2J-5			2	10	10'-0" | 10'-0"		
2J-6			2	8	10'-0" | 10'-0"		
2J-7			2	6		39'-6"	
2J-8			2	7		39'-6"	
2J-9			2	8		39'-6"	
2J-10			2	5	13'-0"		
2J-11			2	7		40'-0"	
2J-12			1	11	13'-6" | 12'-0" / 12'-0" | 13'-6"		
			1	11			
2J-13			2	8	10'-0" | 10'-0"		

FLOOR JOIST & SLAB SCHEDULE

MK	SIZE WIDTH	SIZE DEPTH	REINFORCING NO.	SIZE	TOP	BOTTOM	NOTES
2J-14	8"	14"+5½"	2	6	10'-0" | 10'-0"		
2J-15			2	7	10'-0" | 10'-0"		
2J-16			2	8	10'-0" | 10'-0"		
2S-1	21'-8"	19½"	12	11	14'-6" | 12'-0" / 12'-0" | 14'-6"		
			11	11			
2S-2			9	11	14'-6" | 12'-0" / 12'-0" | 14'-6"		
			9	11			
RJ-1	8"	14"+3"/16	2	5	13'-0"		
RJ-2			2	5	11'-0"		
RJ-3			2	6	13'-0"		
RJ-4			2	7	11'-0"		
RJ-5			2	7		40'-0"	
RJ-6			2	8		40'-0"	
RJ-7			2	9		40'-0"	
RJ-8			1	9	13'-6" | 12'-0" / 12'-0" | 13'-6"		
			1	9			
RJ-9			2	9	10'-0" | 10'-0"		
RJ-10			2	6		39'-6"	
RJ-11			2	7		39'-6"	
RJ-12			2	8		39'-6"	
RS-1	21'-8"	17"	8	10	14'-6" | 12'-0" / 12'-0" | 14'-6"		
			8	10			
RS-2			8	9	14'-6" | 12'-0" / 12'-0" | 14'-6"		
			8	9			

FLOOR BEAM SCHEDULE

MK	SIZE WIDTH	SIZE DEPTH	REINFORCING NO.	SIZE	LENGTH	HK			HK	STIRRUPS	NOTES
1B-1	20½"*	63"†	2	10	31'-0		31'-0			#4@12" THROUGH-OUT STD HK	TOP REINF. EXT. INTO 1B-2 DOWELS SEE S-5
			2	10	23'-0		23'-0				
			4	10	15'-0			15'-0			
1B-2			4	10	28'-0			28'-0			
1B-3			2	10	25'-6		25'-6				BARS 25'-6"℄ 31'-0" LAP 3'@ ℄ OF 1B-3. BARS 25'-0"℄ 17'-0" LAP 3'@ Ⓐ. BARS 43'-0" EXTEND 3'-0" FROM C.J. @ Ⓑ
			3	10	25'-0		25'-0				
			4	10	15'-0			15'-0			
1B-4	24	65½	2	10	31'-0		31'-0				
			3	10	17'-0		17'-0				
			6	10	44'-0			44'-0			
1B-5			2	10	43'-2		43'-2				
			4	10	20'-0		20'-0				
			6	10	39'-0			39'-0			
1B-6			2	10	43'-2		43'-2				
			4	10	20'-0		20'-0				
			2	10	24'-0			22'-6	1'-6"		
			4	10	13'-0			11'-6	1'-6		
			7	10	39'-0			39'-0			
1B-7A	22/24	63½	2	10	34'-0	1'-6	32'-6				TOP REINF. EXTEND INTO 1B-8
1B-7B	24		3	10	24'-0	1'-6	24'-6				
			4	8	15'-0			15'-0			
1B-8			4	10				28'-0			
* 1B-9	24		2	10	24'-0	1'-6	22'-6			4'-0" #4@12" THROUGH-OUT STD HK	
			2	10	12'-6	1'-6	11'-0				
			6	10			39'-0				
1B-10	22/24		4	10	43'-2		43'-2				REFER TO S-5 BARS 43'-2" THRU COLS
			2	10	39'-0		39'-0				
			4	10	43'-2			43'-2			
			6	11	39'-0		39'-0				
1B-11	20/24		4	11	57'-6	2'-6	55'-0				TOP BARS EXT. INTO ADJACENT BM. BARS 30'-0" @ ℄ OF SPAN.
			4	11	30'-0		30'-0				
			5	11	39'-0		39'-0				
* 1B-12	24		6	10	39'-0		39'-0			SAME AS 1B-9	SAME AS 1B-9
* 1B-13	24	40	2	11	27'-0	2'-6	26'-6			4'-0" #4@10" FOR 10'-0" @ BOTH ENDS #4@10" FOR REST	
			3	11	12'-6	1'-6	11'-0				
			5	11	30'-0			30'-0			
			5	11	39'-0			39'-0			
2B-11	24	65½	2	10	24'-0	1'-6	22'-6			#4@12" THROUGH-OUT STD HK	
			2	10	9'-0	1'-6	7'-6				
			6	10	39'-0			39'-0			
2B-1	20/24	63	2	10	31'-0		31'-0			#4@12" THROUGH-OUT STD HK	TOP BARS EXT INTO 2B-2 DOWELS SEE S-6
			2	10	23'-0		23'-0				
			4	10	15'-0			15'-0			
2B-2			14	9	58'-0	PLACE THRU 3/S-9					
			4	10	28'-0			28'-0			
2B-3			2	10	25'-6		25'-6				BARS 25'-6"℄ 31'-0" LAP 3'@ ℄ OF 2B-3. BARS 25'-0"℄ 17'-0" LAP 3'@ Ⓐ. BARS 43'-0" EXTEND 3'-0" FROM C.J. @ Ⓑ
			3	10	25'-0		25'-0				
			4	10	15'-6			15'-0			
2B-4	24	65½	2	10	31'-0		31'-0				
			3	10	17'-0		17'-0				
			6	10	44'-0			44'-0			

* BM WIDTH FOR STIRR./ MAX. BM WIDTH

† 2-#5 HORIZONTAL TEMPERATURE REINF. AT EACH FACE SHALL BE PROVIDED IN ALL THE 63" & DEEPER BEAMS.

CENTER TOP BARS OVER COL. UNLESS NOTED OTHERWISE

CENTER BTM BARS IN SPAN " " "

FLOOR BEAM SCHEDULE

MK	SIZE WIDTH	SIZE DEPTH	REINFORCING NO.	SIZE	LENGTH	HK			HK	STIRRUPS	NOTES
2B-5A	24	65½"	2	10	43'-2"		43'-2			#4@12" THROUGH-OUT STD HK	
			4	10	20'-0		20'-0				
			2	10	43'-2			43'-2			
			4	10	20'-0			20'-0			
2B-5B	22/24		6	10	39'-0			39'-0			
2B-6			6	10	39'-0			39'-0			
2B-7	20/24		3	10	35'-6			34'-0	1'-6"		EXTEND BARS TO FREE END OF CANTILEVER
			2	10	28'-0			26'-6	1'-6		
			4	8	14'-0		14'-0				
2B-8	24		2	10	37'-6	1'-6"	36'-0				
			2	10	28'-0	1'-6	26'-6				
			4	8	14'-0			14'-0			
* 2B-9			6	10	39'-0			39'-0		4'-0" #4@12" THRUOUT STD HK	3-#10 x 11'-0" @ 5/E-D REFER TO S-6. BARS 43'-2" THRU COLS.
2B-10	22/24		4	10	43'-2		43'-2				
			2	10	39'-0		39'-0				
			4	10	43'-2			43'-2			
			6	11	39'-0			39'-0			
RB-1	20/24	66 MIN.	2	10	31'-0		31'-0			#4@12" THROUGH-OUT	TOP BARS EXT-END INTO RB-2
			2	10	23'-0		23'-0				
			4	10	15'-0			15'-0			
RB-2			14	9	58'-0	PLACE THRU 3/S-9					
			4	10	28'-0			28'-0			
RB-3			2	10	25'-6		25'-6				BARS 25'-6"℄ 31'-0" LAP 3'-0" @ ℄ OF RB-3. BARS 25'-0"℄ 17'-0" LAP 3'-0" @ Ⓐ. BARS 43'-0" EXT 3'-0" FROM C.J. @ Ⓑ
			3	10	25'-0		25'-0				
			4	10	15'-6			15'-6			
RB-4	24		2	10	31'-0		31'-0				
			3	10	17'-0		17'-0				
			6	10	44'-0			44'-0			
RB-5			2	10	43'-2		43'-2				
			4	10	20'-0		20'-0				
			2	10	43'-2			43'-2			
			4	10	20'-0			20'-0			
			6	10	39'-0			39'-0			
RB-6	22/24		6	10	39'-0			39'-0			
RB-7	20/24		3	10	35'-6			34'-0	1'-6		
			2	10	28'-0			26'-6	1'-6		
			4	8	14'-0		14'-0				
RB-8	24		2	10	37'-6	1'-6	36'-0				
			2	10	28'-0	1'-6	26'-6				
			4	8	14'-0		14'-0				
* RB-9			6	10	39'-0			39'-0		4'-0" #4@12" THRUOUT STD HK	BARS 43'-2" THRU COLS #4@12 STIRR THRUOUT ON LINE Ⓐ
RB-10	22/24		4	10	43'-2		43'-2				
			2	10	20'-0		20'-0				
			4	10	43'-2			43'-2			
			2	10	20'-0			20'-0			
			6	10	39'-0			39'-0			
RB-11	24		2	10	24'-0	1'-6	22'-6			SAME AS RB-1	
			2	10	9'-0	1'-6	7'-6				
			6	10	39'-0			39'-0			

SHEET NO. S-10 BEAM, JOIST AND SLAB SCHEDULE

Add: RJ 13 and RJ 14. Reinforce same as RJ 9.

SHEET NO. S-10 BEAM, JOIST, AND SLAB SCHEDULE
SECTOR A

Change stirrups for Marks 1B-9, 1B-12, 1B-13, 2B-9, and RB-9 to 6'-0" long top leg.

SHEET NO. S-10 BEAM, JOIST, AND SLAB SCHEDULE
SECTOR A

Change length of bottom bars in Beams 2B4, 2B5, 2B5, 2B4, 2B5A, 2B6, RB4, RB5, and R36 to 38'-0". Place bottom reinforcing in these beams in two layers.

TYPICAL JOIST & BEAM SCHEDULE

MK	SIZE WIDTH	SIZE DEPTH	REINFORCING NO.	SIZE	LENGTH	HK				HK	STIRRUPS	NOTES
TJ-1												SEE DTL (16/S34)
TJ-2	6'	17" / 30"	2	9	23'-0	1'-6"	22'-0				15-#3 @ 12" EA. END	
			4	9	39'-0			39'-0				
			2	9	20'-0				20'-0			
			2	9	43'-0				43'-0			
TJ-3			2	6	25'-0	1'-6	23'-6					TOP BARS EXTEND INTO TJ-4
			2	6	15'-0			15'-0				
TJ-4			2	6	28'-0		28'-6				5-#3 @ 12" EA. END	
TJ-5			2	6	17'-6	1'-6	16'-0					DOWELS SEE S-5 S-7 & (4/S34)
			2	6	15'-0			15'-0				
TJ-6			3	7	30'-0		30'-0					EXT. TOP BARS TO THE FREE END OF CANT. TYP.
			2	5	15'-0			15'-0				
TJ-7			2	9	11'-6	1'-6	10'-0				SAME AS TJ-2	
			2	8	30'-0			30'-0				
			2	9	39'-0			39'-0				
TJ-8			2	8	44'-6	1'-6	CONT.		CONT	1'-6		
			2	8	30'-0			30'-0				
			2	9	39'-0			39'-0				
TJ-9			3	7	25'-0	2'-0	23'-0					TOP BARS EXTEND INTO ADJACENT BM. SEE S-6
			2	5	15'-0			15'-0				
TJ-10												SEE DTL (17/S34)
TJ-11												
TB-1												SEE DTL (1/S34)
TB-2												
TB-3												SEE DTL (2/S34)
TB-4												
TB-5												SEE DTL (3/S34)
TB-6												
TB-7												SEE DTL (12/S34)
TB-1R												SEE DTL (1/S34)
TB-2R												
TB-5R												SEE DTL (3/S34)
TB-6R												
TB-8 TB-8R	1'-11"	2'-3"	2	5	14-0			14-0			15-#3 @ 12" OR 4'-0" 15-#3 @ 12" FOR C.J. ONLY	SEE DTL (18/S34) TOP BARS EXTEND INTO ADJACENT B.M.
			4	10	36'-3		36'-3					

C. V. RUEGSTAEDER
STRUCTURAL ENGINEERS
4504 S. W. CORBETT
PORTLAND, OREGON 97201

PHASE III - HEALTH SCIENCES BUILDING
PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

BEAM, JOIST & SLAB SCHEDULE / SECTOR A

DATE JULY 1, 1970

JOB NO. 69-13D

REVISIONS

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
ASSOCIATE ARCHITECTS
PETERSON & SMITH
5502 N. E. GLISAN STREET
PORTLAND, OREGON

SHEET NO.
S-10

SHEET NO. S-11 FOUNDATION PLAN

The center line of caissons and grade beams on Line A1A through A4A is 5" north of grid line A. All others are centered on grid Line A.

Grade beam from column A5 to A6 is centered on grid Line A.

For dimensions of sump near column E-4, see detail 3/30.

WHERE REQ'D. FOR CONSTRUCTION: VERTICAL C.J. IN FIRST STORY OF ALL WALLS SHALL BE MADE MIDWAY BETWEEN COLUMNS. HORIZ. WALL REINF. SHALL BE SPLICED @ COLS. ONLY

C. V. BURGSTAHLER
STRUCTURAL ENGINEERS
4604 S. W. CORBETT
PORTLAND, OREGON 97201

JOB NO. 69-13-D
DATE JULY 1, 1970
REVISIONS

FOUNDATION & BASEMENT PLAN / SECTOR B

PHASE III - HEALTH SCIENCES BUILDING

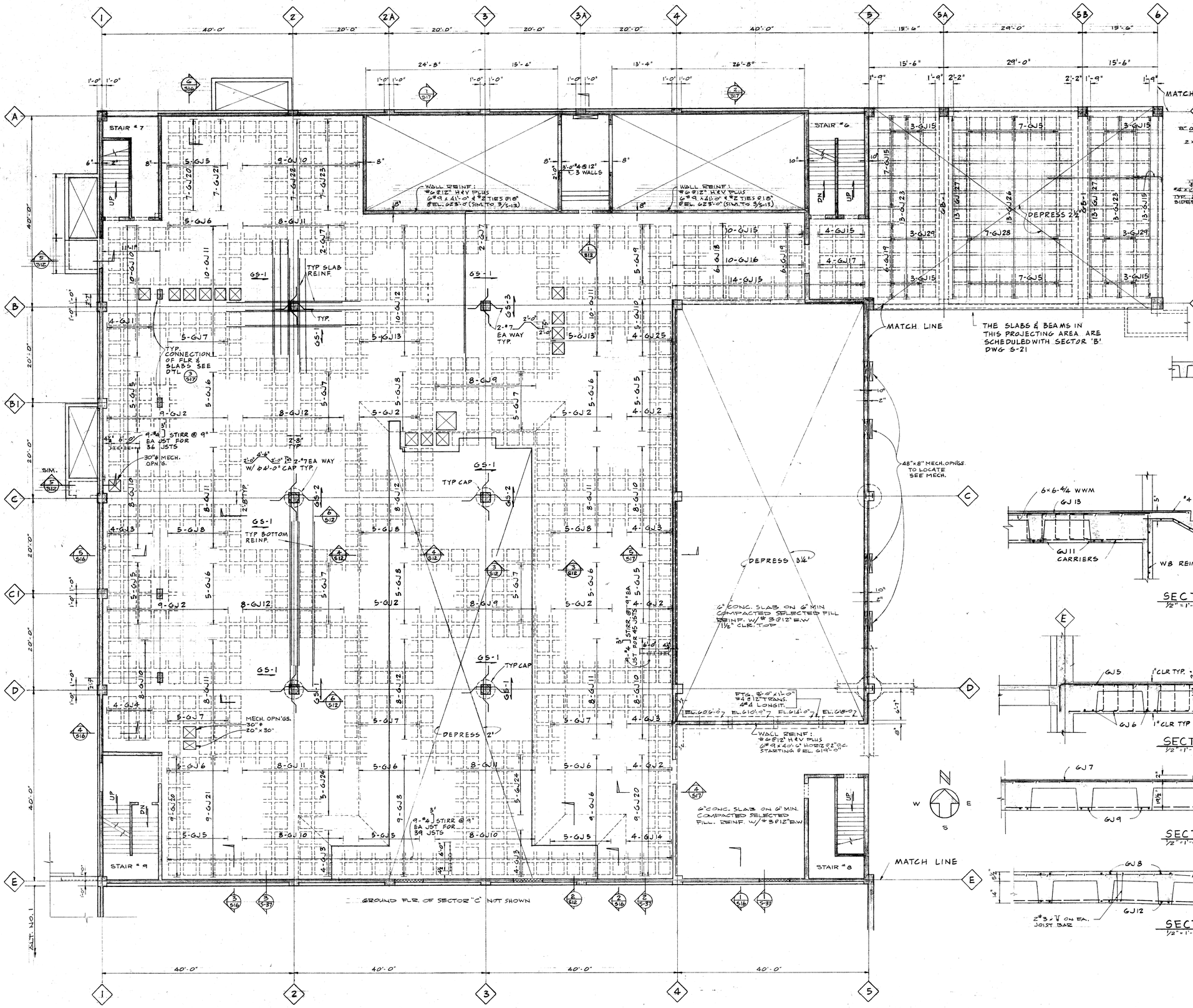
PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

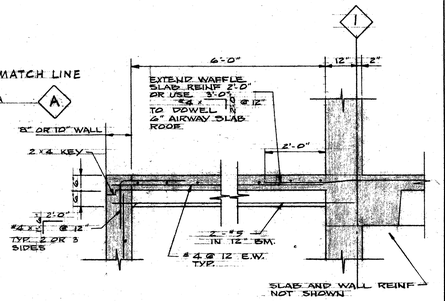
BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH
ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET
PORTLAND, OREGON

REGISTERED PROFESSIONAL ENGINEER
STATE OF OREGON

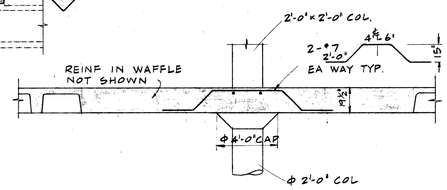
REGISTERED PROFESSIONAL ENGINEER
OREGON
OCT. 24, 1958
SAMUEL M. HOLMES

SHEET NO.
S-11

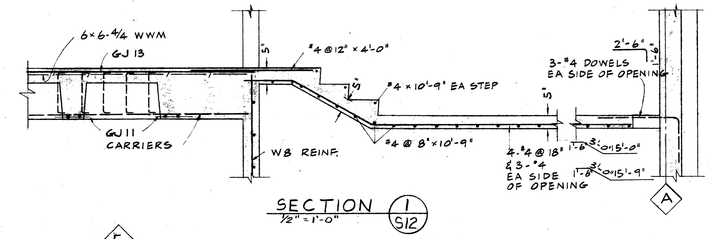




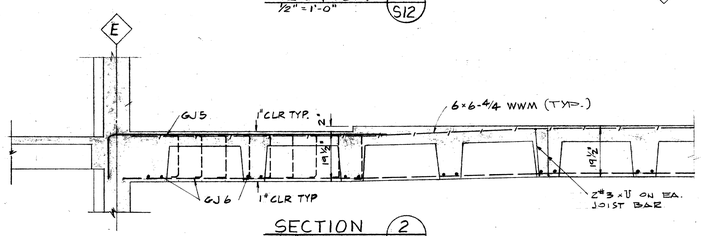
SECTION 5/S12 — ½" = 1'-0"



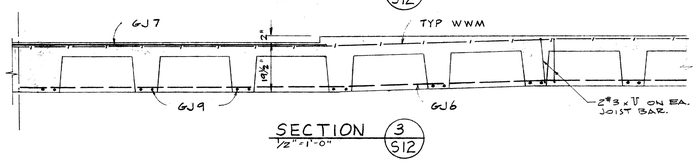
SECTION 6/S12 — 1/4" = 1'-0"



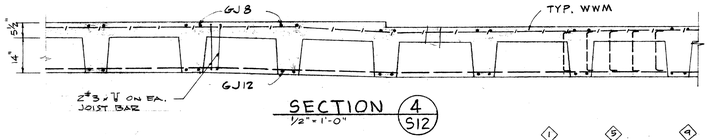
SECTION 1/S12 — ½" = 1'-0"



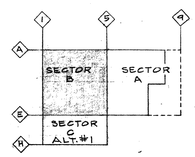
SECTION 2/S12 — ½" = 1'-0"



SECTION 3/S12 — ½" = 1'-0"



SECTION 4/S12 — ½" = 1'-0"



C. V. BURGSTAHLER
STRUCTURAL ENGINEERS
4804 S. W. CORBETT
PORTLAND, OREGON 97201

DATE JULY 1, 1970

JOB NO. 69-13-D

REVISIONS

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
ASSOCIATE ARCHITECTS
PETERSON & SMITH
3502 N. E. GLISAN STREET
PORTLAND, OREGON

PHASE III - HEALTH SCIENCES BUILDING
PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

GROUND FLOOR PLAN / SECTOR B

REGISTERED ARCHITECT OREGON

REGISTERED PROFESSIONAL ENGINEER OREGON

SHEET NO.
S-12

PHASE III - HEALTH SCIENCES BUILDING

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

FIRST FLOOR PLAN/SECTOR B

BEAR, MCNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

JOB NO. 69-13D DATE JULY 1, 1970

REVISIONS

SHEET NO. S-13

SECTION 2 / S-13 — 1" = 1'-0"

SECTION 3 / S-13

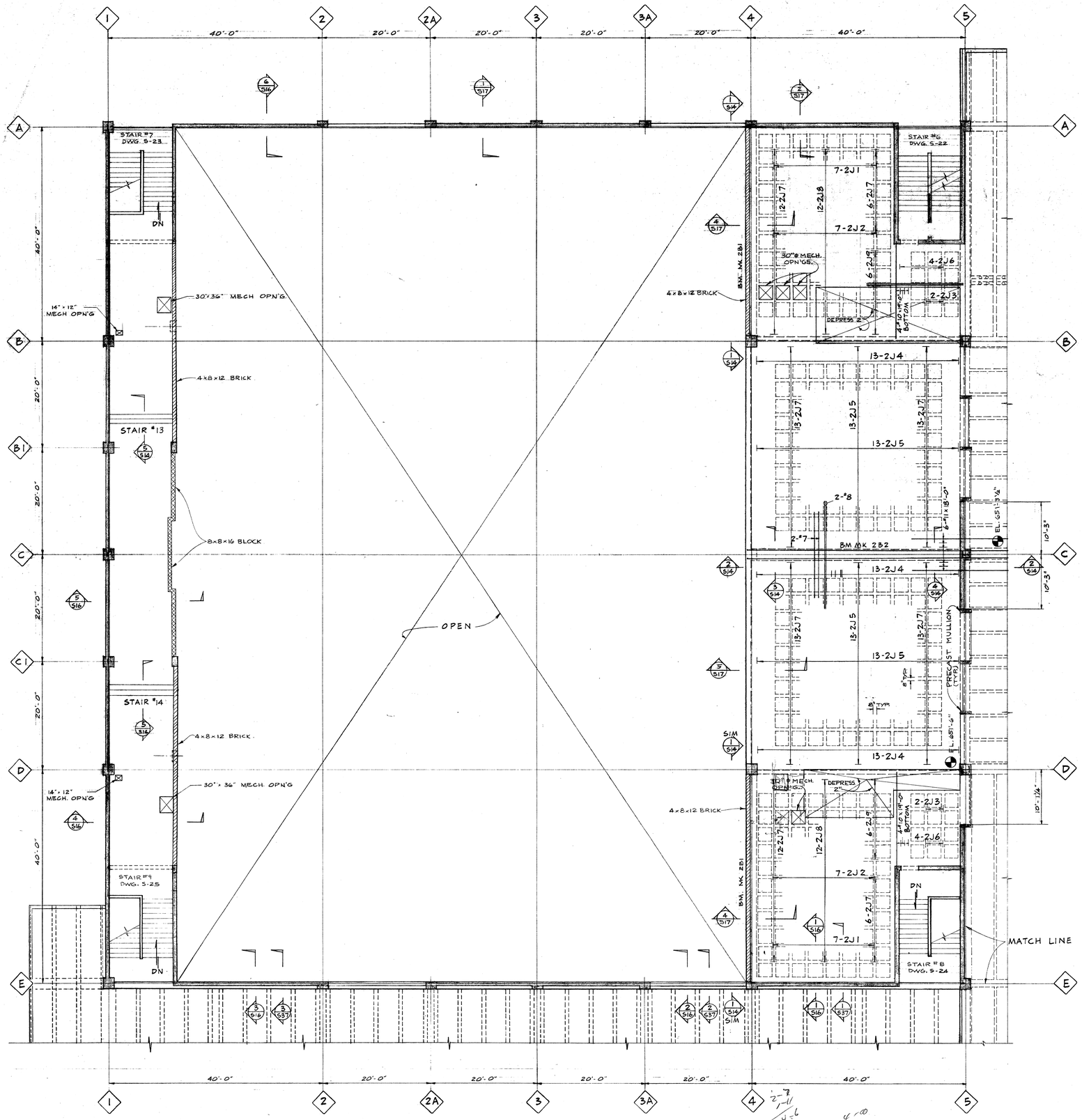
SECTION 3 / S-13B

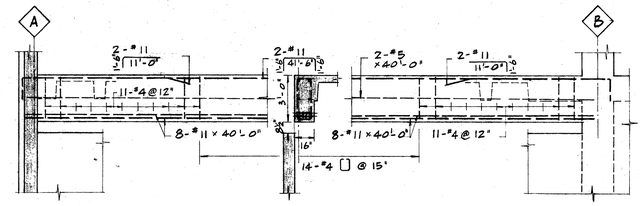
PLAN-ELEVATED FLOOR AT STAGE & STORAGE ROOM 1 / S-13 — 1/8" = 1'-0"

NOTE: ELEVATIONS SHOWN ARE TOP OF STRUCTURAL FLOOR. SEE ARCH DWGS FOR ELEVATION OF FINISH FLOOR

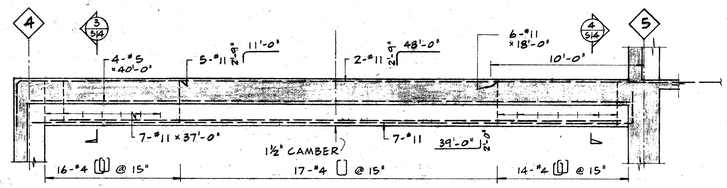
SECTOR A, SECTOR B, SECTOR C, AXIS #1

C. V. BURGSTRESSER
STRUCTURAL ENGINEER
PORTLAND, OREGON

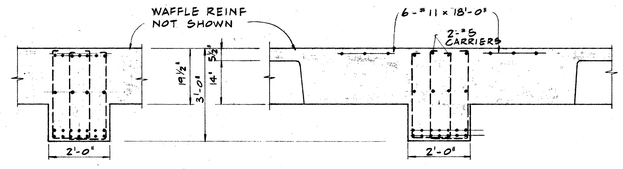




SECTION 1/514 BM. MK. 2B1
1/4" = 1'-0"

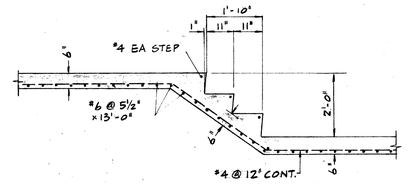


SECTION 2/514 BM. MK. 2B2
1/4" = 1'-0"



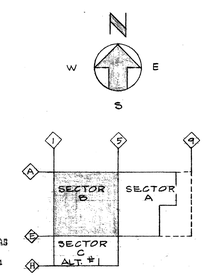
SECTION 3/514
1/2" = 1'-0"

SECTION 4/514
1/2" = 1'-0"



SECTION 5/514
1/2" = 1'-0"

C. V. BURGSTAHLER
STRUCTURAL ENGINEERS
4504 S. W. CORBETT
PORTLAND, OREGON 97201



JOB NO. 69-13-D
DATE JULY 1, 1970
REVISIONS

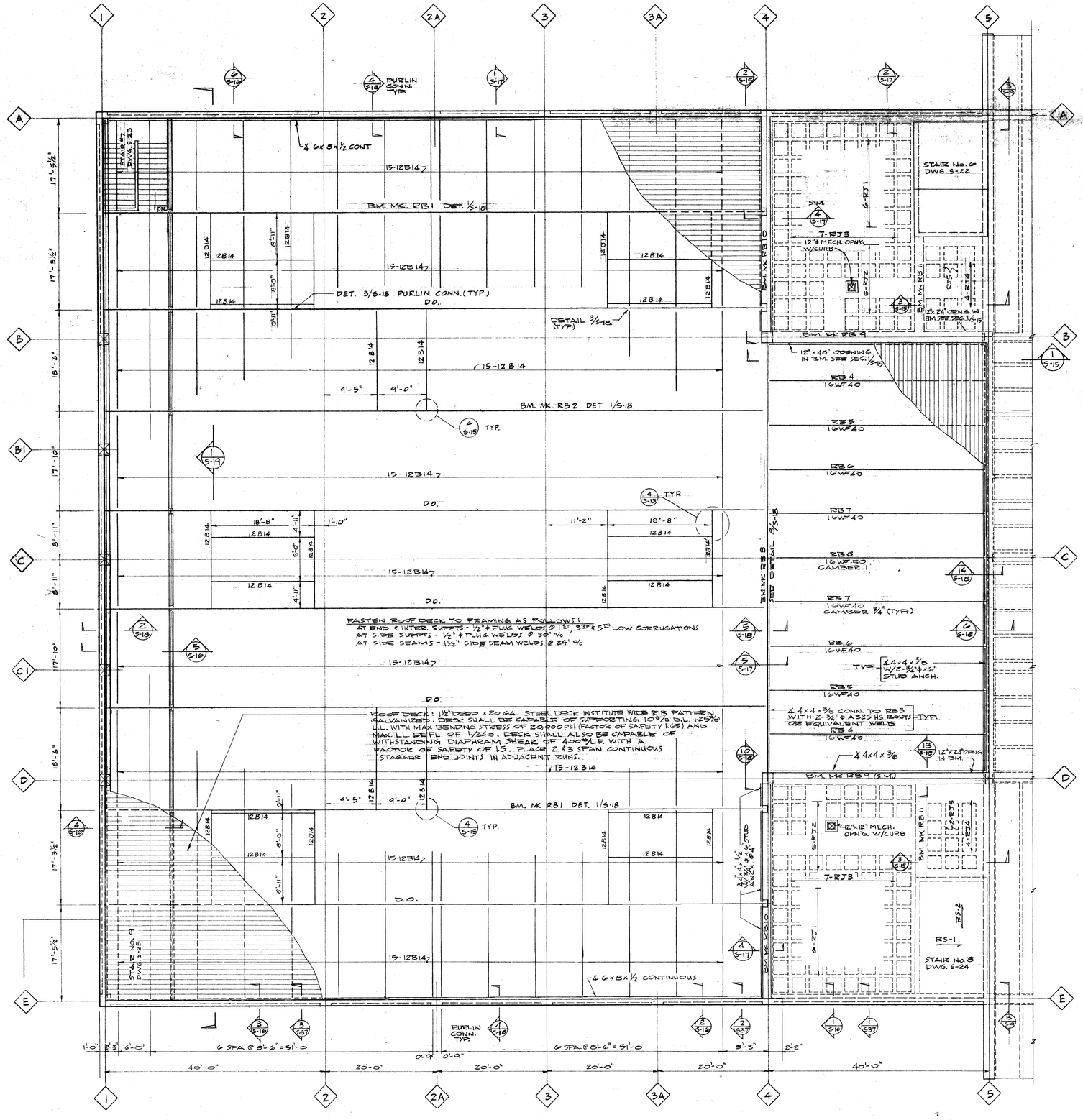
SECOND FLOOR PLAN / SECTOR B

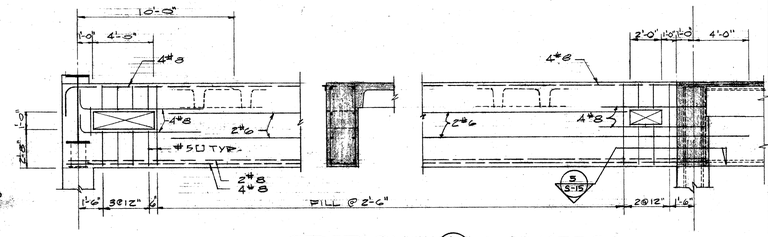
BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

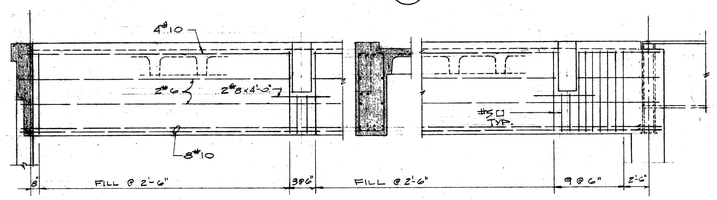
PHASE III-HEALTH SCIENCES BUILDING

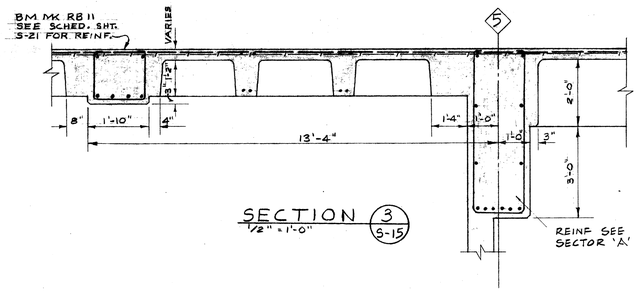
PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

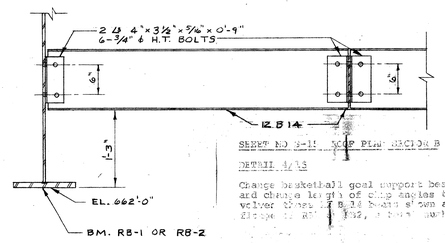
SHEET NO.
S-14











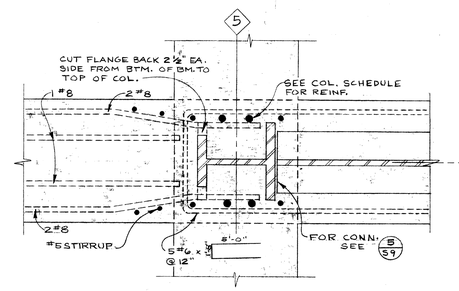
SHEET NO. S-11 ROOF PLAN SECTOR B

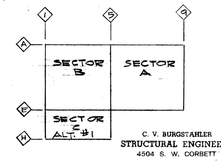
DETAIL 4/13

Change basketball goal support beams from 12 B 14 to 3 WF 31, and change length of clip angles to conform. This change involves moving 2 B 14 beams shown at 11'-8" above bottom flange to 8'-0" above bottom flange at Col. line 28.

SHEET NO. S-15 ROOF PLAN SECTOR B DETAIL 4/14 CONTINUED

Provide 26" x 20" gauge ridge cap for metal roof deck. Weld to alternate high corrugations on each side of ridge with 1 1/2" seam weld.





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PORTLAND, OREGON 97201

PHASE III - HEALTH SCIENCES BUILDING

ROOF PLAN / SECTOR B

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

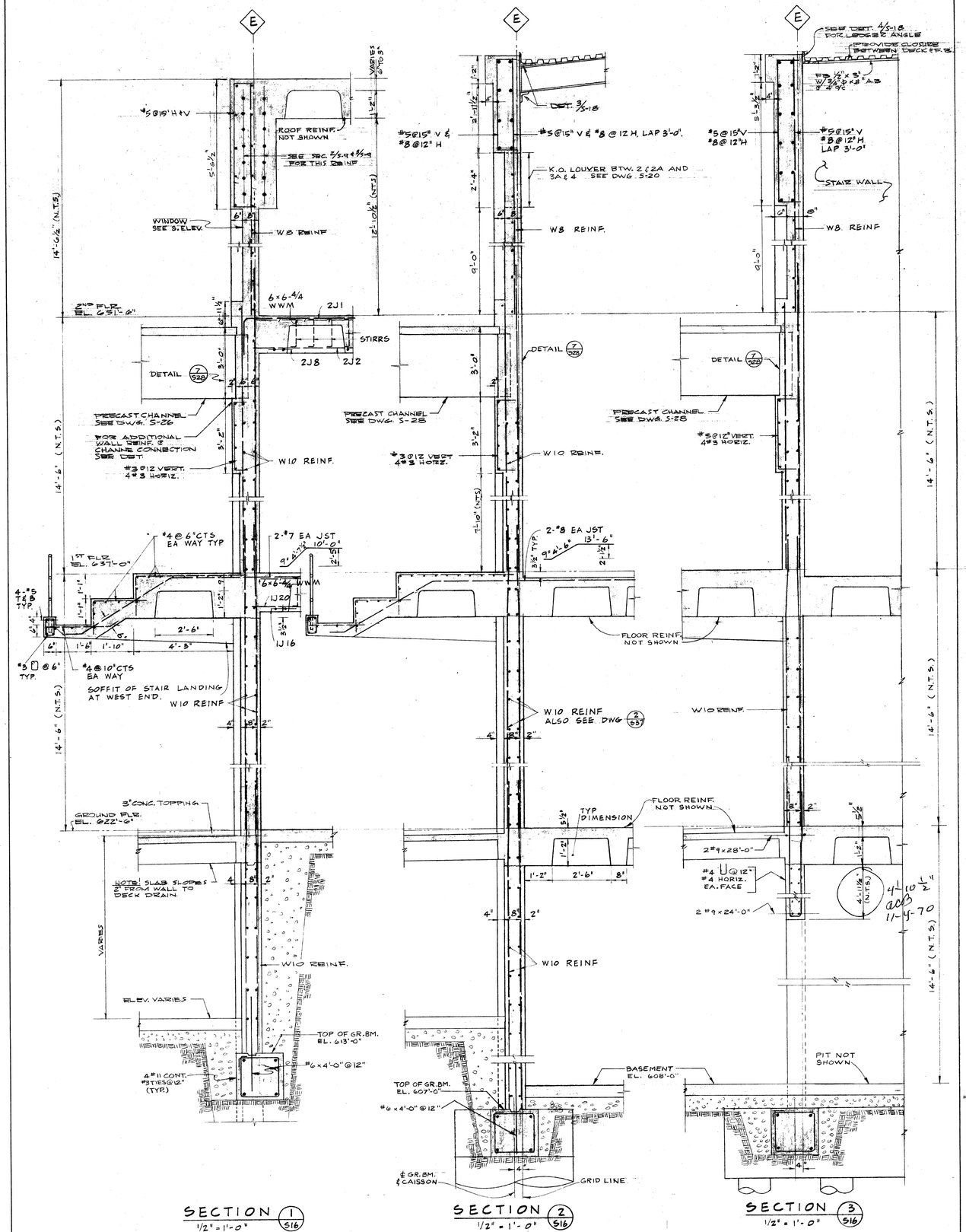
JOB NO. 69-13-D DATE JULY 1, 1970

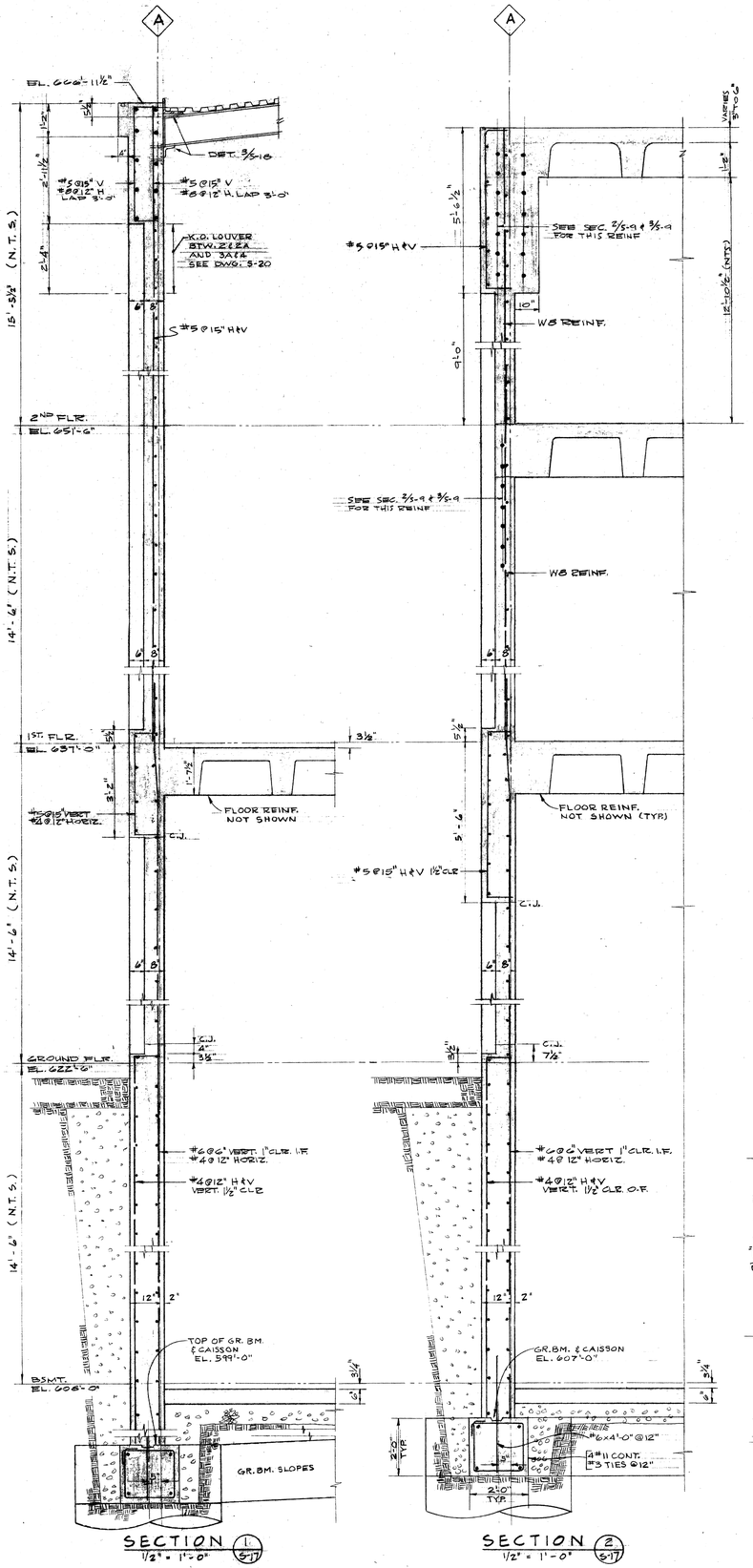
REVISIONS

REGISTERED PROFESSIONAL ENGINEER — OREGON — 4328 — EXPIRES DEC. 31, 1970 — DANIEL M. PETERSON

REGISTERED PROFESSIONAL ENGINEER — OREGON — 4328 — EXPIRES DEC. 31, 1970 — SAMUEL M. HAWES

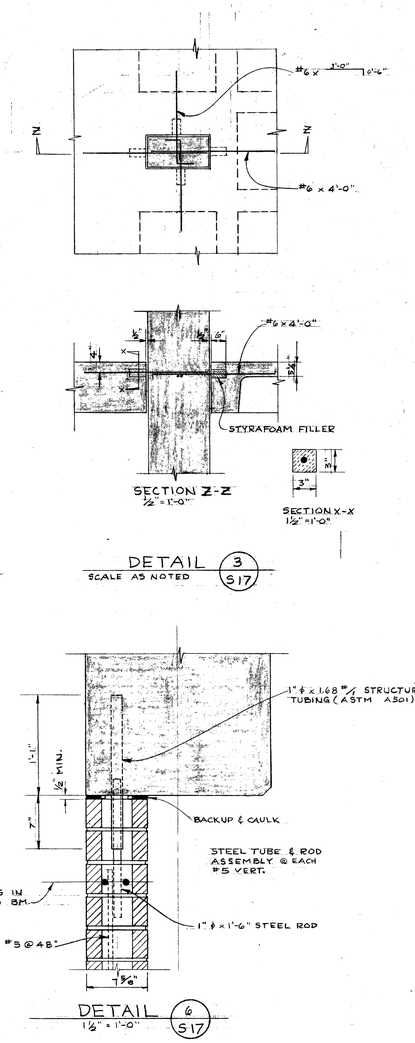
SHEET NO.
S-15


E
E
E
#5@19" H+V
ROOF REINF. NOT SHOWN
SEE DET. 3/S-9 & 4/S-9 FOR THIS DWG INF.
VARIES
#5@15" V & #8@12" H
#5@15" V & #8 @ 12 H, LAP 3'-0".
#5@15" V #8@12" H LAP 3'-0"
SEE DET. 4/S-18 FOR LEDGE ANGLE
PROVIDE CLOSURE BETWEEN DECK & F.B.
F.B. 1/2" x 3" W/ 3/4" ø x 3" A.B. @ 4'-0" c
DET. 3/S-18
K.O. LOUVER BTW. 2 & 2A AND 3A & 4 SEE DWG. S-20
STAIR WALL
WINDOW SEE S. ELEV.
W8 REINF
W8 REINF.
W8 REINF
6'-8"
9'-0"
6'-8"
6'-8"
14'-6" (N.T.S.)
12'-10½" (N.T.S.)
5'-6½"
2'-11½"
2'-4"
6'-11½"
6'-8"
6'-8"
6'-8

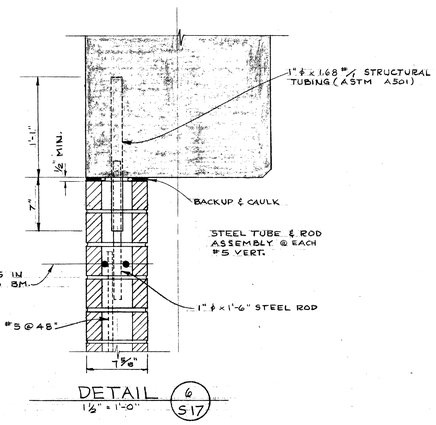


SECTION 1 (S-17) — 1½" = 1'-0"

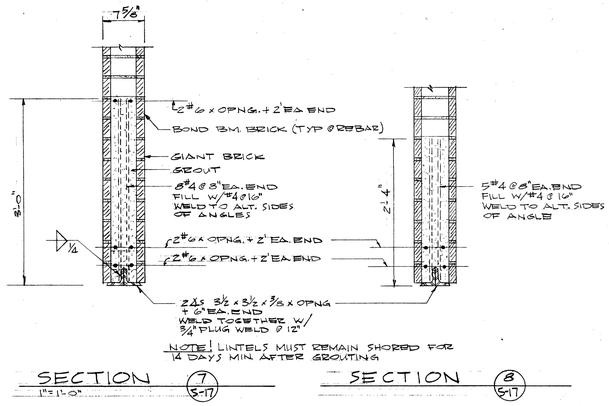
SECTION 2 (S-17) — 1½" = 1'-0"



DETAIL 3/S17 — SCALE AS NOTED



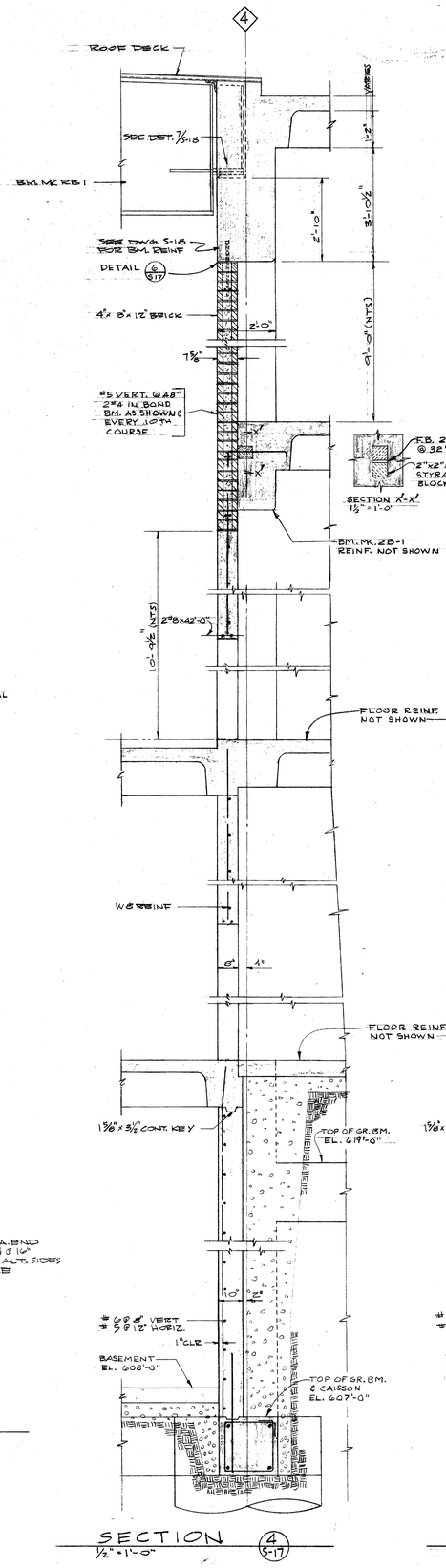
DETAIL 6/S17 — 1½" = 1'-0"



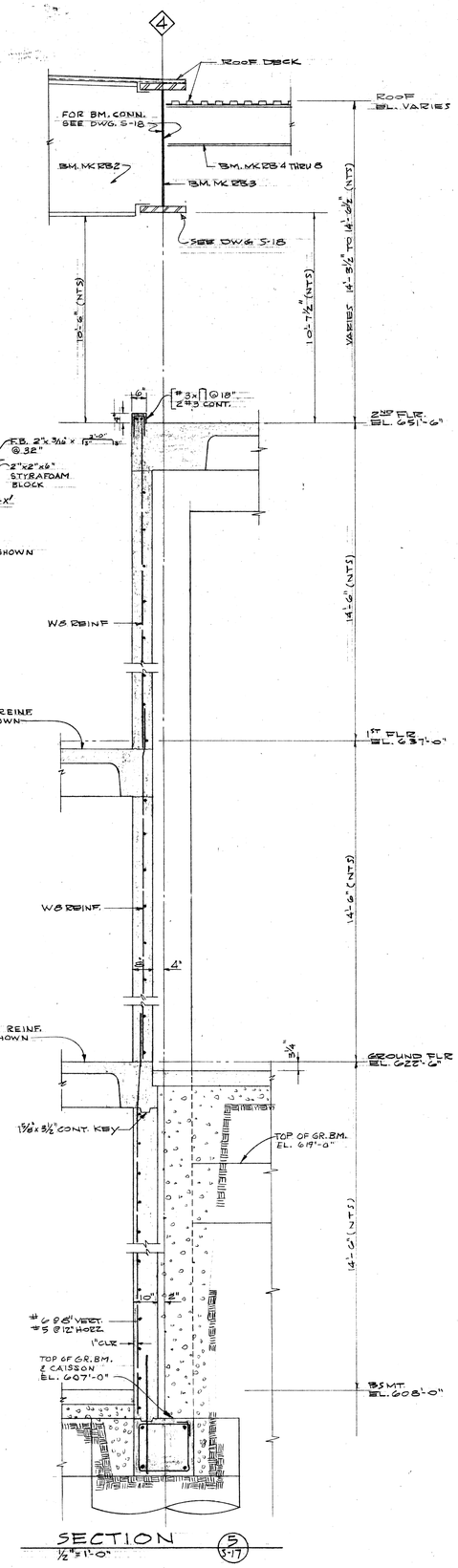
NOTE! LINTELS MUST REMAIN SHORED FOR 14 DAYS MIN AFTER GROUTING

SECTION 7/S-17 — 1" = 1'-0"

SECTION 8/S-17



SECTION 4/S-17 — ½" = 1'-0"



SECTION 5/S-17 — ½" = 1'-0"

C. V. BURGSTAHLER
STRUCTURAL ENGINEERS
4904 S. W. CORBETT
PORTLAND, OREGON 97201

WALL SECTIONS / SECTOR B

DATE JULY 1, 1970

JOB NO. 69-130

REVISIONS

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

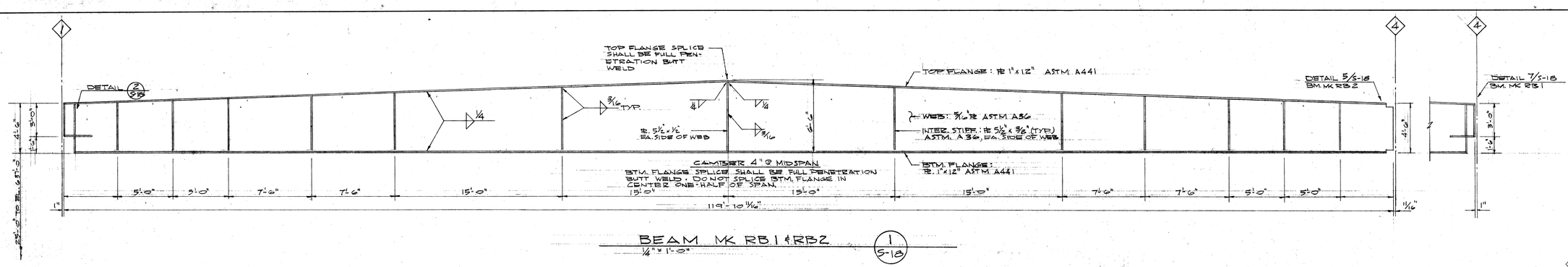
PHASE III HEALTH SCIENCES BUILDING

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

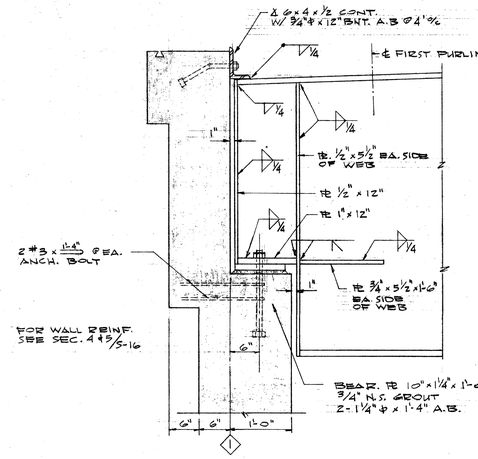
REGISTERED ARCHITECT — STATE OF OREGON

REGISTERED PROFESSIONAL ENGINEER — STATE OF OREGON

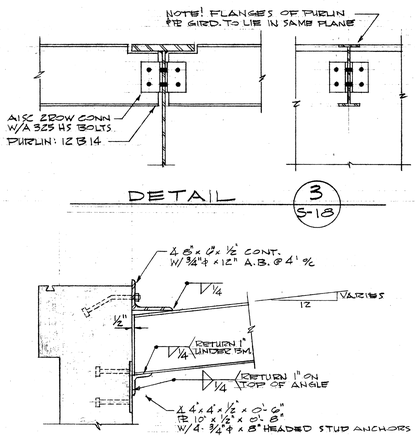
SHEET NO.
S-17



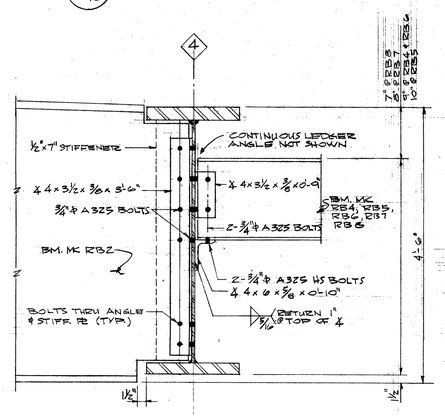
BEAM MK RB1 & RB2 (1 S-18)
1/4" = 1'-0"



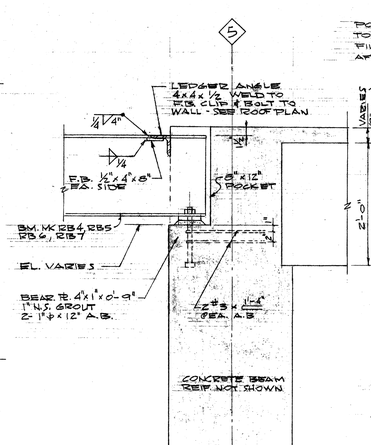
DETAIL (2 S-18)
1"=1'-0"



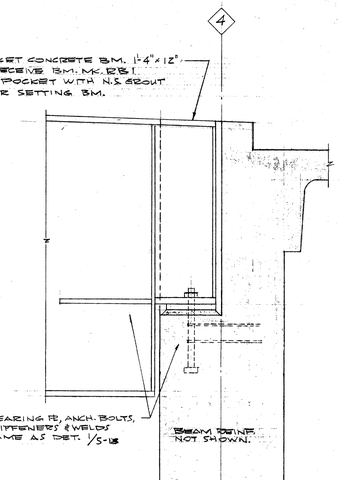
DETAIL (3 S-18)
DETAIL (4 S-18)
1"=1'-0"



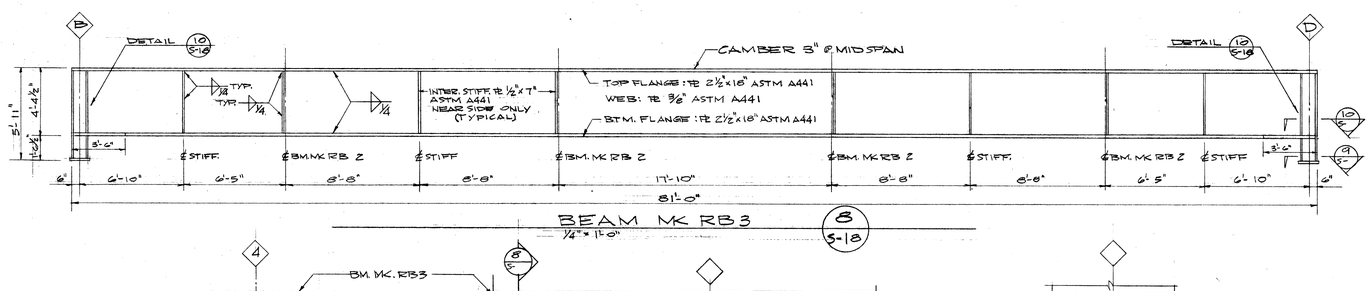
DETAIL (5 S-18)
1"=1'-0"



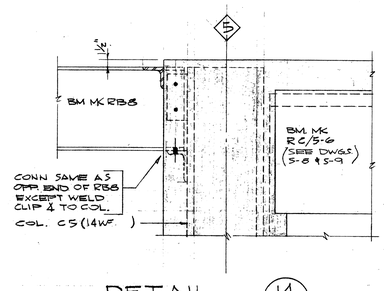
DETAIL (6 S-18)
1"=1'-0"



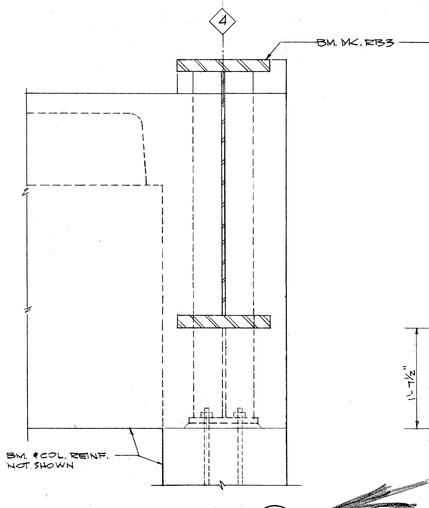
DETAIL (7 S-18)
1"=1'-0"



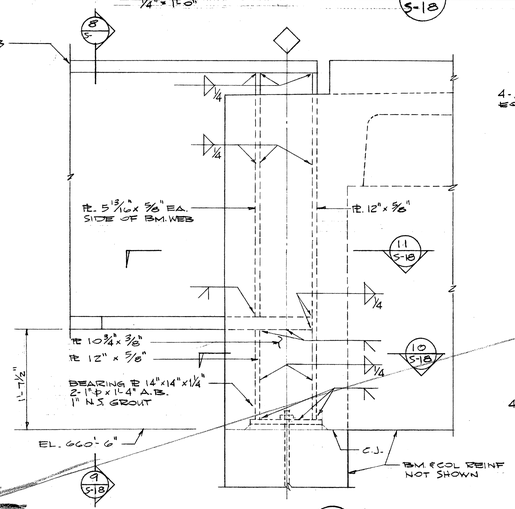
BEAM MK RB3 (8 S-18)
1/4" = 1'-0"



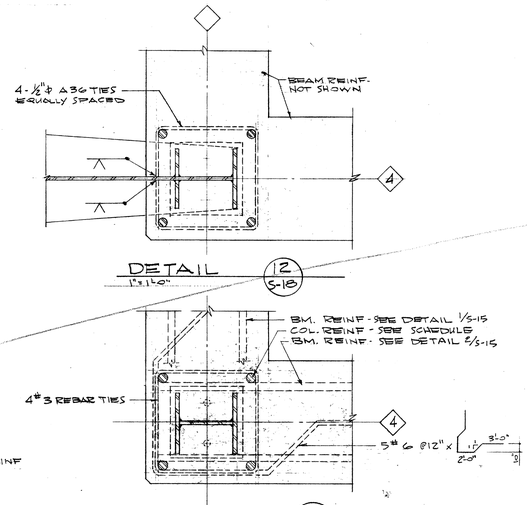
DETAIL (14 S-18)
1"=1'-0"



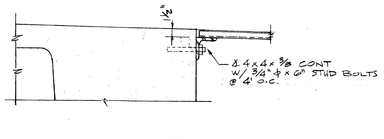
DETAIL (9 S-18)
1"=1'-0"



DETAIL (10 S-18)
1"=1'-0"



DETAIL (12 S-18)
1"=1'-0"
DETAIL (11 S-18)
1"=1'-0"



DETAIL (13 S-18)
1"=1'-0"

SHEET NO. S-18 ROOF FRAMING DETAILS SECTOR B

DETAIL 5/S-18

Change connection of PL 2 to RB 3 to 2 angles 4 x 3 1/2 x 5/8 x 8'-6" with a total of 24 - 3/4" DIA. A 325 bolts per connection. Relocate web stiffener so as not to interfere with connection.

DETAIL 3/S-18

Change dimensions shown as 8'-8" to 8'-11".

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ROOF FRAMING DETAILS/SECTOR B
PHASE III-HEALTH SCIENCES BUILDING
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PORTLAND OREGON

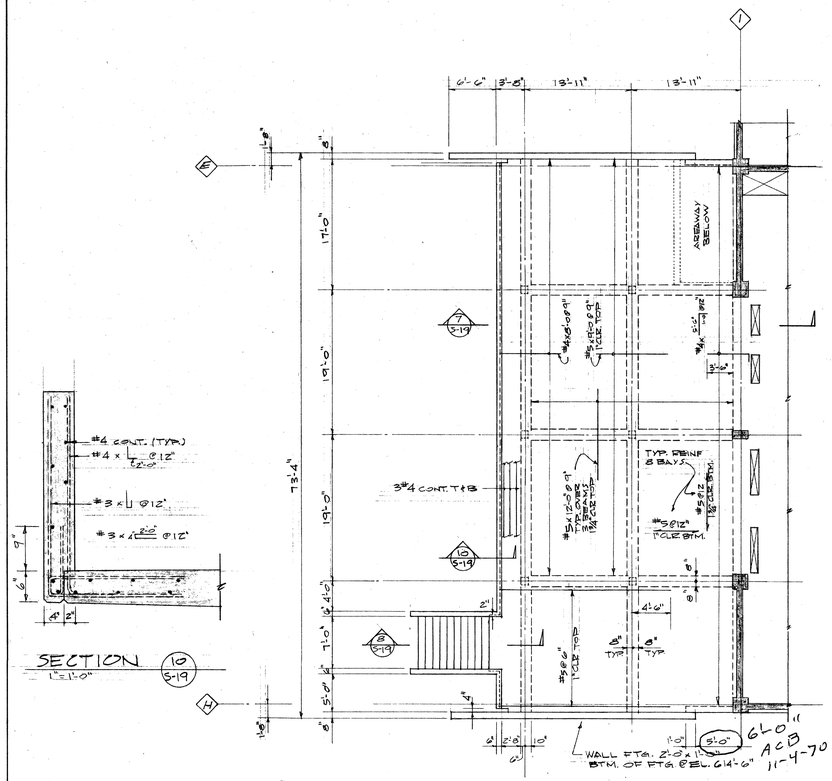
JOB NO. 67-13 D | DATE JULY 1, 1970
REVISIONS

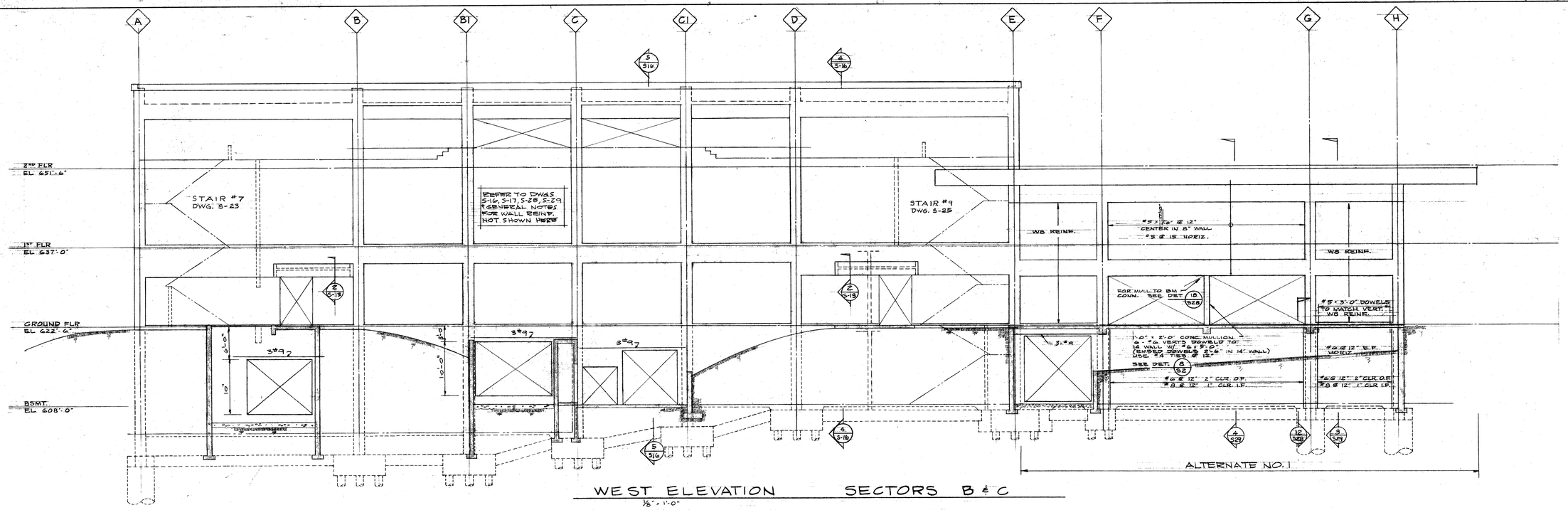
BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

REGISTERED ARCHITECT ... STATE OF OREGON

REGISTERED PROFESSIONAL ENGINEER ... SAMUEL M. PLATNICK

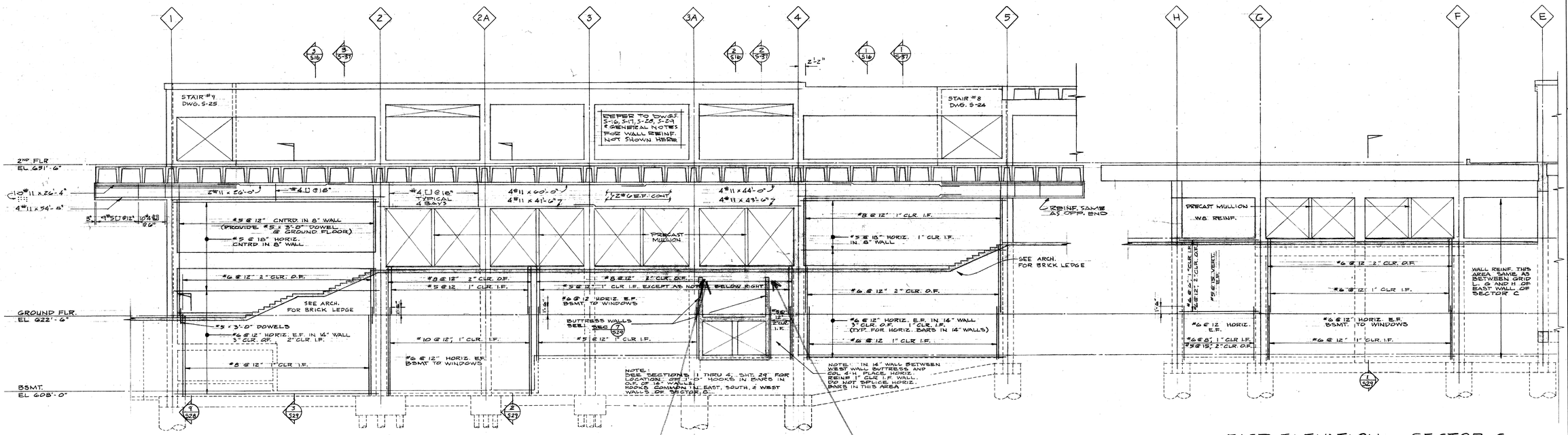
SHEET NO. S-18


6'-0" 3'-0" 13'-11" 13'-11"
17'-0"
19'-0"
19'-0"
73'-4"
AREAWAY BELOW
3#4 CONT. T&B
TYP. REINF. 8 BAYS
#5@12" T&B
#5@12" T&B
#5@12" T&B



WEST ELEVATION SECTORS B & C

1/8" = 1'-0"



SOUTH ELEVATION SECTOR "C" & UPPER PART SECTOR "B"

1/8" = 1'-0"

(SEE ALTERNATE NO. 1)

EAST ELEVATION SECTOR C

1/8" = 1'-0"

(ALTERNATE NO. 1)

SHEET NO. S-20 SOUTH ELEVATION SECTOR B

Elevation at top of wing walls above tunnel to be 629'-0".

JOB NO. 69-13-D

DATE JULY 1, 1970

REVISIONS

ELEVATIONS/SECTOR B

PHASE III - HEALTH SCIENCES BUILDING

PORTLAND COMMUNITY COLLEGE
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ASSOCIATE ARCHITECTS
PETERSON & SMITH
5502 N. E. GLISAN STREET PORTLAND, OREGON

REGISTERED ARCHITECT
STATE OF OREGON

REGISTERED PROFESSIONAL ENGINEER
4326
STATE OF OREGON
JAMES M. HOLMES
DEC. 24, 1970

SHEET NO.
S-20

C. V. BURGSTAHLER
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SLAB/JOIST/BEAM SCHEDULE - SECTOR "B"

GROUND FLOOR - JOIST & SLAB SCHEDULE

MK	SIZE WIDTH	SIZE DEPTH	REINFORCING NO.	REINFORCING SIZE	REINFORCING TOP	REINFORCING BOTTOM	NOTES
GJ1	8"	14"+5½"	1	7	13'-6" @ 20'-9"		BARS 20'-9" EXTEND 2'-0" INTO STAIR
			1	7	12'-6" 20'-9"		
GJ2			1	7		35'-3"	ALL STIRR. SEE
			1	7		39'-6"	GENERAL NOTES S-2
GJ3			1	8	18'-6" GRID 12'-0"		ALT DIFF LENGTHS
			1	8	12'-0" 13'-6"		
GJ4			1	8	15'-9" @ 12'-0"		BARS 15'-9" EXTEND
			1	8	15'-9" 13'-6"		2'-0" INTO STAIR
GJ5			4	7	10'-0" GRID 10'-0" EMBED 10" INTO WALL		2"7 IN SLAB
GJ6			1	7		35'-3"	EMBED 6" INTO WALL
			1	7		39'-6"	
GJ7			2	9	10'-0" GRID 10'-0"		
GJ8			2	8	10'-0" 10'-0"		
GJ9			2	9		30'-0"	ALT DIFF LENGTHS
						39'-6"	
GJ10			2	8	10'-6" & 14'-0" - ALT.		TWO 14'-0" BARS IN SLAB
			2	8			TYP STIRR.
GJ11			1	10		39'-6"	
			1	10		35'-3"	
GJ12			1	7		39'-6"	ALT DIFF LENGTHS
			1	7		30'-0"	
GJ13			2	9	10'-0" @ 19'-9"		
GJ14			1	7	12'-6" OR 10'-6"		ALT DIFF LENGTHS
			1	7			EMBED 10" INTO WALL
GJ15			2	6	5'-0"		EMBED 6" INTO WALL
GJ16			2	6		17'-6"	
GJ17			2	7		16'-0"	
GJ18			2	7		26'-6"	
GJ19			2	6	8'-0" 6'-0" GRID OR ℄ OF WALL		
GJ20			2	7	9'-3"		EMBED 6" INTO WALL TYP STIRR.
GJ21			2	7		27'-6"	
GJ22			2	7	9'-3" 2 15'-0"		
GJ23			2	6		14'-6"	
GJ24			2	9	20'-0"		
GJ25			1	7	13'-6" OR 8' 9'-5"		
			1	7	12'-0" 19'-5"		
GJ26			2	7		26'-6"	
GJ27			2	7	12'-6" 7'-3"		
GJ28			2	7		41'-9"	
GJ29			2	6		41'-9"	
GS-1	21'-8"	19½"	9	11	14'-6" & 10'-0"		
			9	11	10'-0" 14'-6"		
GS-2			8	10	14'-6" 10'-0"		TYP STIRR.
			8	10	10'-0" 14'-6"		
GS-3			8	10	14'-6" @ 9'-6"		ALT DIFF LENGTHS
			8	10	10'-0" 13'-6"		
GB-1	24	30	6	11	2 @ 12'-0"		2-#4 STIRR @ 12", 13'-0" FROM EA END
			6	11	12'-0" 2 @ 12"		
			4	11		30'-0"	1-#4 STIRR FOR REST.
			6	11		39'-6"	

1ST FLOOR - JOIST, SLAB & BEAM SCHEDULE

MK	SIZE WIDTH	SIZE DEPTH	REINFORCING NO.	REINFORCING SIZE	REINFORCING TOP	REINFORCING BOTTOM	NOTES
1J1	8"	14"+5½"	4	7	10'-0"		EMBED 10" INTO WALL #4 STIRR @ 14" CTS FOR 7'-0", 2"7 IN SLAB
1J2			1	7		35'-3"	ALT DIFF LENGTHS
			1	7		39'-6"	EMBED 3" INTO WALL
1J3			2	9	10'-0" GRID 10'-0"		
1J4			1	7		35'-3"	
			1	7		39'-6"	
1J5			2	9	10'-0" GRID 10'-0"		
1J6			2	8	9"x 18'-6" 13'-6" 2'-0"		SEE D'TL (2/516)
1J7			2	8	10'-0" OR 12'-0"		2"8 x 10'-6" IN SLAB, #4 STIRR @ 18" CTS FOR 7'-0"
			2	8			
1J8			1	10		35'-3"	
			1	10		39'-6"	
1J9			1	7		30'-0"	ALT DIFF LENGTHS
			1	7		39'-6"	
1J10			2	7	7'-0"		EMBED 10" INTO WALL
1J11			2	7		20'-0"	EMBED 3" INTO WALL
1J12			2	9	10'-0" GRID 26'-0"		
1J13			1	9		30'-0"	
			1	9		39'-6"	
1J14			1	7	13'-6" GRID 26'-0"		
			1	7	12'-0" 26'-0"		
1J15			1	8	13'-6" GRID 12'-0"		ALT DIFF LENGTHS
			1	8	12'-0" 13'-6"		
1J16			2	6		28'-0"	
1J17			2	7	7'-0" GRID 7'-0"		
1J18			2	7		18'-0"	EMBED 3" INTO EXTERIOR WALL
1J19			2	8	17'-6"		EMBED 3" INTO EXTERIOR WALL
1J20			2	7		39'-6"	
1J21			2	7	9"x 7½" 10'-0" 1'-0"		SEE D'TL (1/516)
1J22			2	7	17'-6"		EXTENT 3'-0" INTO STAIR
			2	7		11'-0"	FOR 11'-0" SPAN ONLY
1J23			1	6		30'-10"	
			1	6		39'-6"	
1J24			2	7	21'-3"		EMBED 6" INTO WALL
1J25			2	7		27'-6"	EMBED 3" INTO WALL
1J26			2	7	9'-3" 2 20'-0" 2A 7'-0"		
1J27			2	7	7'-0" ℄ OF WALLS 11'-9" 7'-0"		
1J28			2	7	21'-6"		EMBED 10" INTO WALL REINF AROUND OPNG SEE S-13
1J29			1	7		24'-6"	EMBED 3" INTO
			1	7		28'-0"	2'-8" x 30" BEAM
1J30			2	7	10'-0" ℄ OF SUPPORT 10'-0"		
1S1	14"	43½"	3	9	3:0 8'-0" STAIR WALL	19'-8"	2"4 U @ 12" EA. END SEE. 5/S-16
			2	9	℄ COL. 8'-0"		
1S2	14"	43½"	2	9		19'-8"	6"4 U @ 12" EA END SEE 5/S-16
			3	9	8'-0" ℄ 8'-0"		
1S3	14"	43½"	2	9		19'-8"	6"4 U @ 12" EA END
1S-1	21'-8"	19½"	9	11	14'-6" 10'-0"		ALT DIFF LENGTHS SEE FLR PLAN
			9	11	10'-0" 14'-6"		
1S-2			8	10	14'-6" 10'-0"		ALT DIFF LENGTHS
			8	10	10'-0" 14'-6"		
1S-3			8	10	14'-6" 26'-0"		ALT DIFF LENGTHS
			8	10	10'-0" 26'-0"		
1S-4			10	11	14'-6" 10'-0"		ALT DIFF LENGTHS
			10	11	10'-0" 12'-0"		

2ND FLOOR - JOIST & BEAM SCHEDULE

MK	SIZE WIDTH	SIZE DEPTH	REINFORCING NO.	REINFORCING SIZE	REINFORCING TOP	REINFORCING BOTTOM	NOTES
2J1	8"	14"+5½"	2	7	10'-0"		2" CLR WALL TYP.
2J2			2	6		39'-6"	
2J3			2	5		18'-0"	
2J4			2	7	8'-0" 10'-0"		
			2	8	10'-0" 8'-0"		
2J5			2	7		39'-6"	
2J6			2	5	5'-0" ℄ OF WALL 5'-0"		
2J7			2	8	7'-0"		
2J8			2	7		27'-6"	
2J9			2	8	19'-6"		EMBED 6" INTO WALL
2B1	16"	36"					SEE D'TL (1/514)
2B2	24"	36"					SEE D'TL (2/514)

SHEET NO. 21 BEAM, JOIST, AND SLAB SCHEDULE SECTOR B

Change reinforcing in joist marked 1 J 30 as follows: In the top 2-No. 7 31'-0" long to extend 8'-0" east of grid line No. 5. In the bottom 2-No. 6 14'-0" long.

SHEET NO. 21 BEAM, JOIST, AND SLAB SCHEDULE SECTOR B CONTINUED

Change reinforcing in joist marked 2 J 9 as follows: In the top 2-No. 8 29'0" long to extend 8'-0" east of grid line No. 5. In the bottom 2-No.6 14'-0" long.

ROOF JOIST, SLAB & BEAM SCHEDULE

MK	SIZE WIDTH	SIZE DEPTH	REINFORCING NO.	REINFORCING SIZE	REINFORCING TOP	REINFORCING BOTTOM	NOTES
RJ-1	8"	14±3 MIN	2	6	1'-0" 8'-0"		WEST END 1" CLR. BTM
			2	6		28'-0"	
RJ-2	8"		2	6	1'-0" 8'-0"		WEST END 1" CLR. BTM.
			2	6		41'-8"	
RJ-3	8"		2	5	1'-0" 6'-0"		EA. END
			2	5		41'-8"	
RJ-4	8"		2	7	25'-0"		EXTEND 3'E. OF ℄
RJ-5	8"		2	5	1'-0" 5'-0"		EA. END
			2	5		18'-6"	
RS-1	21'	6"	21	6	25'-0"	13'-0"	1" CLR. BTM
			12	6			2 DIA JOIST NO. 21-1 EXTEND 3' BEYOND ℄
RS-2	11'-6"	6"	11	4		23'-0"	
			11	4	1'-0" 4'-0" 6'-0"		SOUTH END N END CTR. OVER WALL
			11	4			
RB 9	24"	66"					SEE SECT. (1/515)
RB 10	24'	84"					SEE SECT. (2/515)
RB 11	SEE SEC. 5/S-15		4	6	1'-0" 6'-0" 8'-0"	18'-0"	6"#4 U EA. END. AT LINES 5 & D CTR. OVER EW WALL
			4	6			

BLOCK WALL LINTEL SCHEDULE

WALL THICKNESS	WIDTH OF OPENING	NO. OF COURSES ABOVE LINTEL COURSE GROUTED FULL	LONGIT. REINF.	STIRRUPS
6"	3' OR LESS	LINTEL COURSE ONLY	2-#4 x 5'-0	
	4'	ONE	2-#4 x 8'-0	
	6'	ONE	2-#4 x 10'-0	#3] @ 8"
	8'	ONE	2-#5 x 12'-0	#3] @ 8"
8"	3' OR LESS	LINTEL COURSE ONLY	2-#4 x 5'-0	
	4'	LINTEL COURSE ONLY	2-#4 x 8'-0	
	6'	ONE	2-#4 x 10'-0	#3] @ 8"
	8'	ONE	2-#5 x 12'-0	#3] @ 8"
	10'	TWO	2-#6 x 14'-0	#3] @ 8"

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BEAM/JOIST/SLAB SCHEDULE - SECTOR "B"
JOB NO. 69-15-D
DATE JULY 1, 1970
REVISIONS

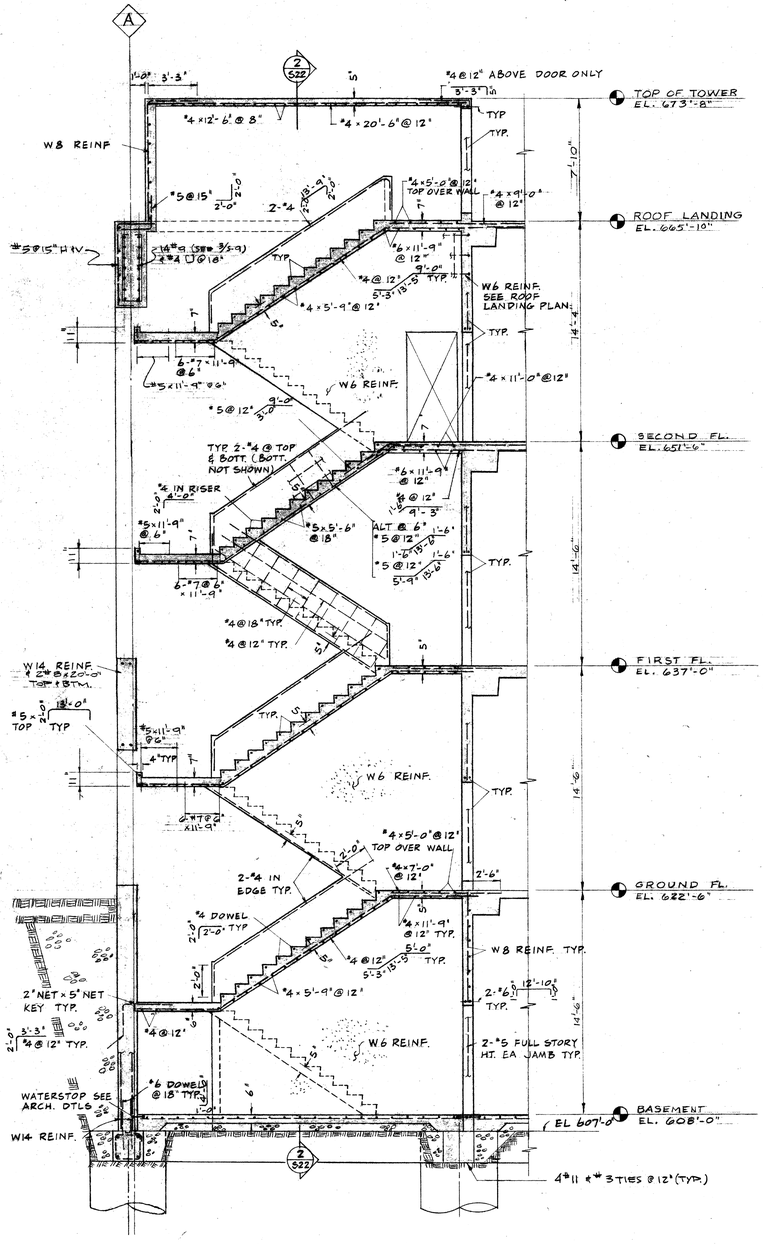
PHASE III - HEALTH SCIENCES BUILDING
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5502 N. E. GLISAN STREET PORTLAND, OREGON

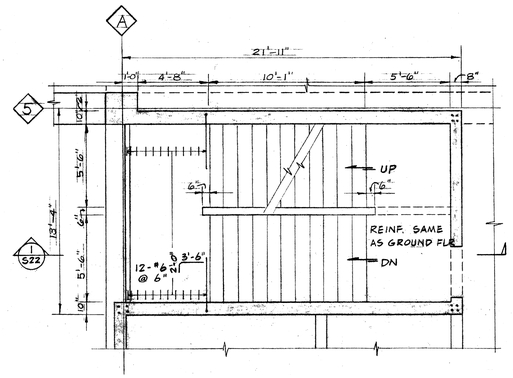
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PORTLAND, OREGON
STATE OF OREGON

REGISTERED ENGINEER
4326
RENEWAL DATE JUNE 30, 1971
SAMUEL M. HUNTER

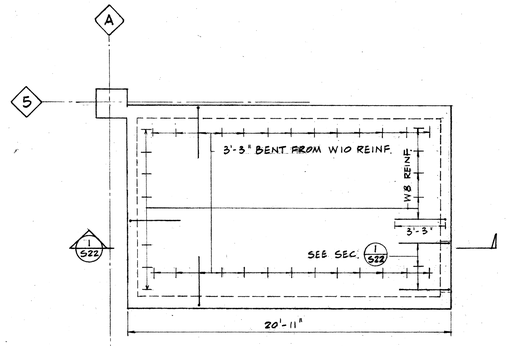
SHEET NO.
S-21



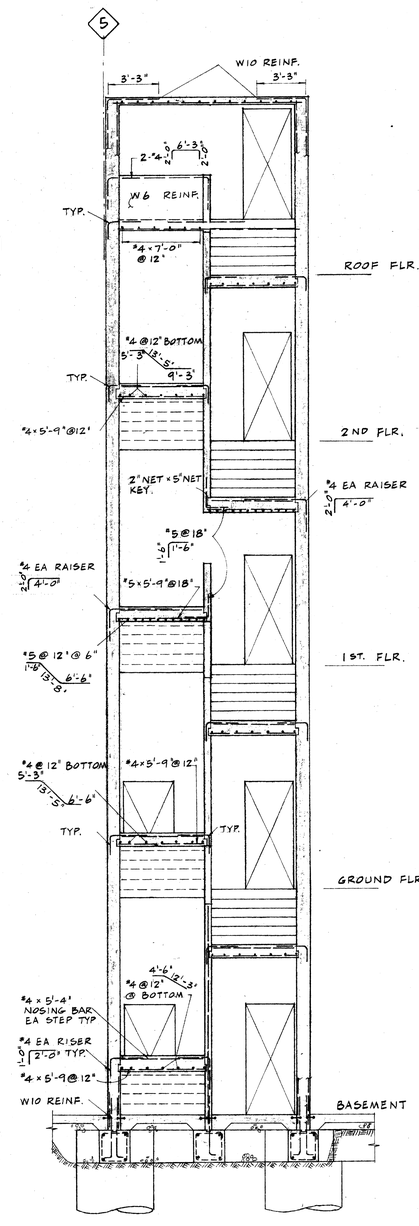
SECTION THRU STAIR #6 (1/S22)
SCALE 1/4" = 1'-0"



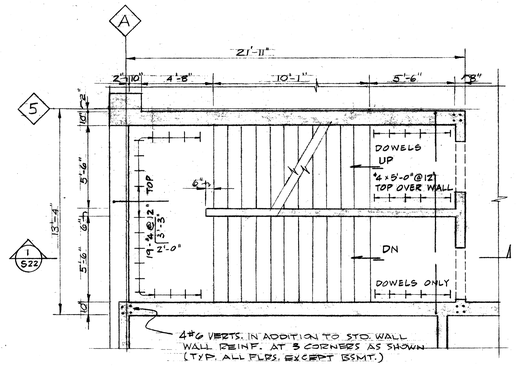
FIRST FLOOR PLAN
SCALE 1/4" = 1'-0"



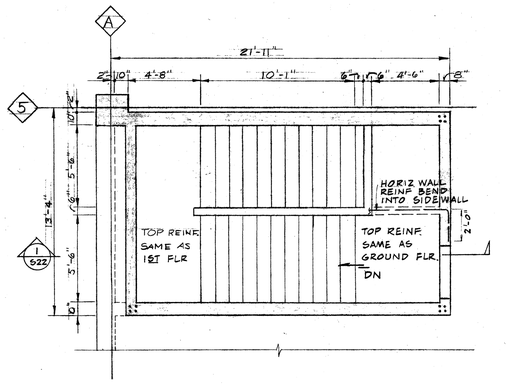
ROOF PLAN
SCALE 1/4" = 1'-0"



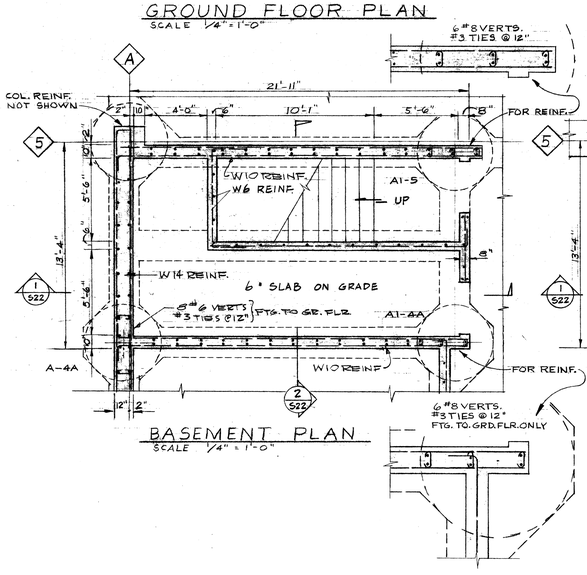
SECTION (2/S22)
1/4" = 1'-0"



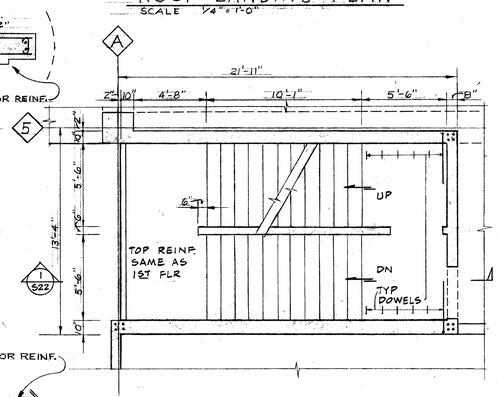
GROUND FLOOR PLAN
SCALE 1/4" = 1'-0"



ROOF LANDING PLAN
SCALE 1/4" = 1'-0"



BASEMENT PLAN
SCALE 1/4" = 1'-0"



SECOND FLOOR PLAN
SCALE 1/4" = 1'-0"

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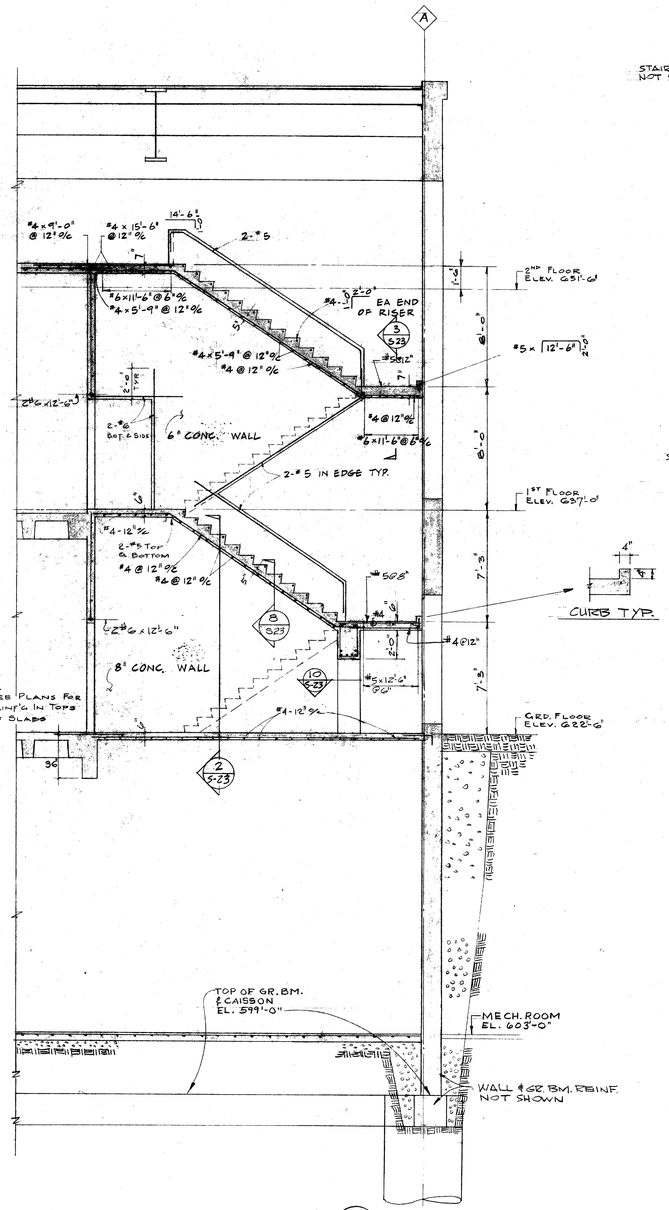
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JOB NO. 69-13-D
DATE JULY 1, 1970
REVISIONS

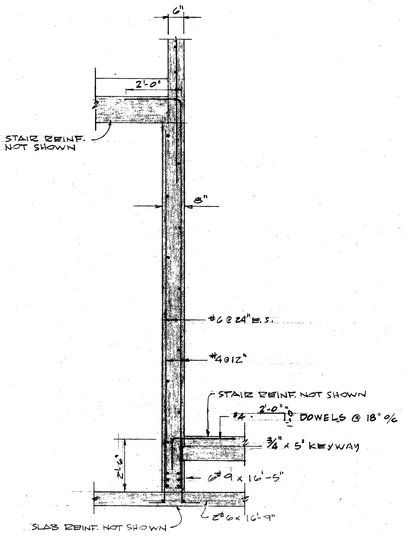
STAIR No. 6

SHEET NO.
S-22

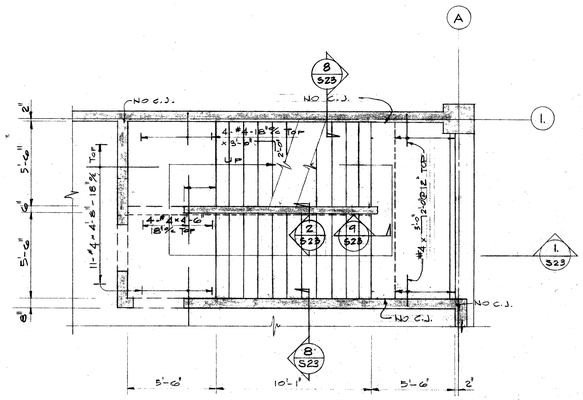
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PORTLAND, OREGON 97201



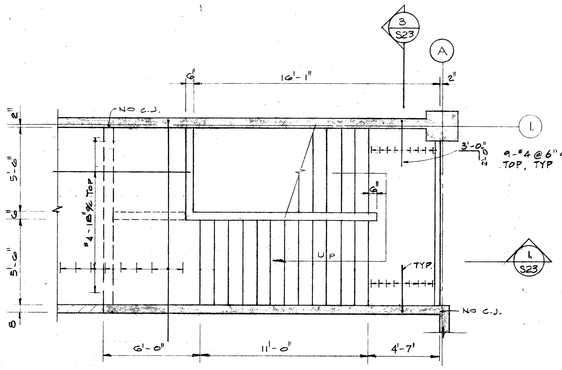
SECTION THRU STAIR #7 (1/S23)
SCALE 1/4" = 1'-0"



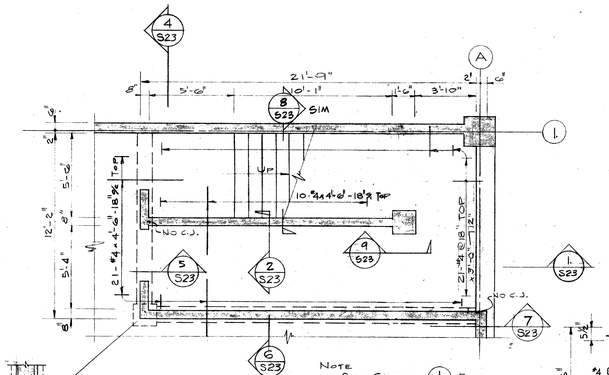
SECTION (2/S-23)
1/2" = 1'-0"



FIRST FLOOR PLAN
1/4" = 1'-0"



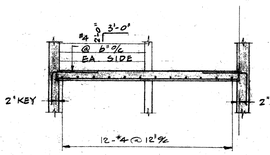
SECOND FLOOR PLAN
1/4" = 1'-0"



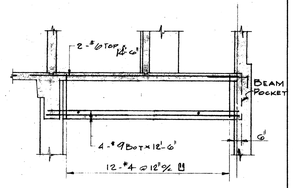
Note.
See Section (1/S23) For Reinf'g In Bottoms Of Slabs.

GROUND FLOOR PLAN
1/4" = 1'-0"

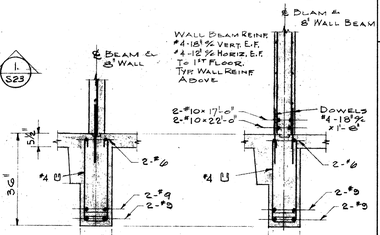
WALL REINF. PER 5/S-23 & 6/S-23 WITH 5-#4 OVER, & DOWELED INTO, COL. BELOW



BEAM ELEV. (3/S23)
24" x 14" 1/4" = 1'-0"

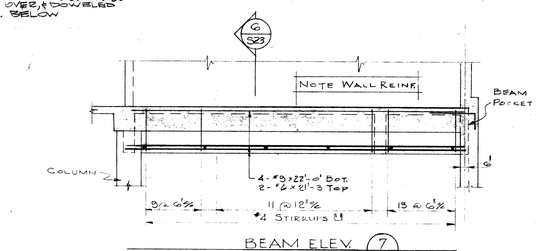


BEAM ELEV. (4/S23)
x 36" 1/4" = 1'-0"

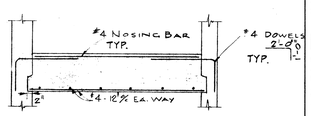


BEAM SECT. (5/S23)
1/2" = 1'-0"

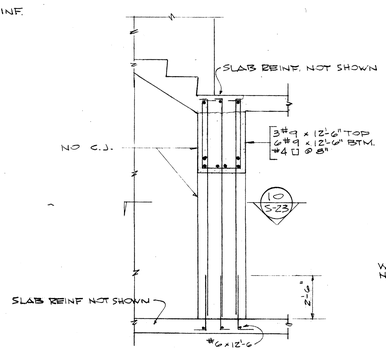
BEAM SECT. (6/S23)
1/2" = 1'-0"



BEAM ELEV. (7/S23)
1/4" = 1'-0"



STAIR SECT. (8/S23)
1/2" = 1'-0"



SECTION (9/S-23)
1/2" = 1'-0"

SECTION (10/S-23)
1/2" = 1'-0"

NOTE! ALL STAIR WALLS MUST BE SHORED FROM GROUND UNTIL ENTIRE STAIR IS COMPLETED & UNTIL THAT PART BETWEEN GROUND FLOOR & FIRST FLOOR HAS REACHED 28 DAY COMPRESSIVE STRENGTH AS DETERMINED BY FIELD CURED TEST CYLINDERS.

C. V. BURGSTAHLER
STRUCTURAL ENGINEERS
4304 S. W. CORBETT
PORTLAND, OREGON 97201

DATE JULY 1, 1970
JOB NO. 69-13-D
REVISIONS

STAIR NO. 7

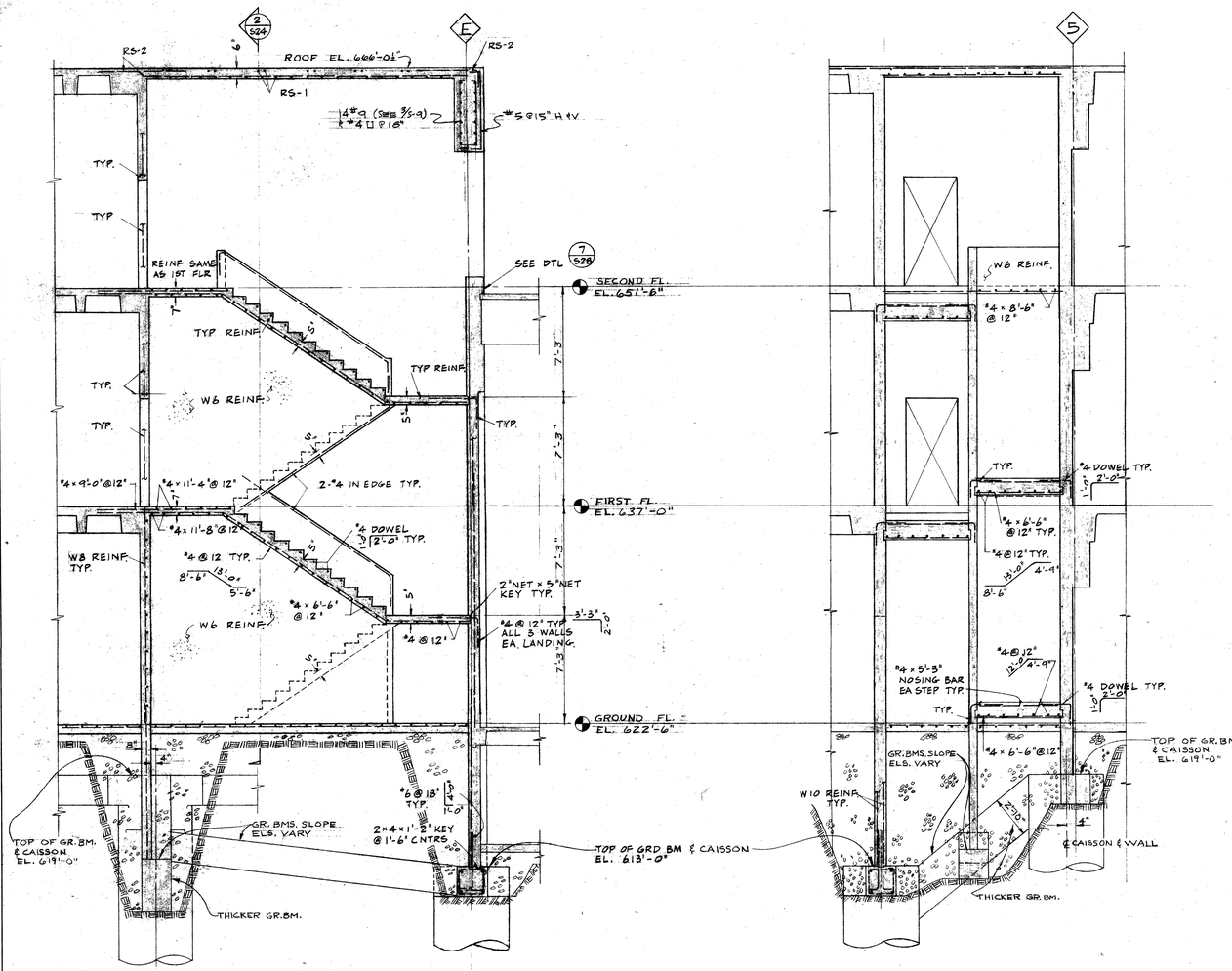
PHASE III - HEALTH SCIENCES BUILDING
PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

REGISTERED ARCHITECT
STATE OF OREGON

REGISTERED CIVIL ENGINEER
4326
STATE OF OREGON

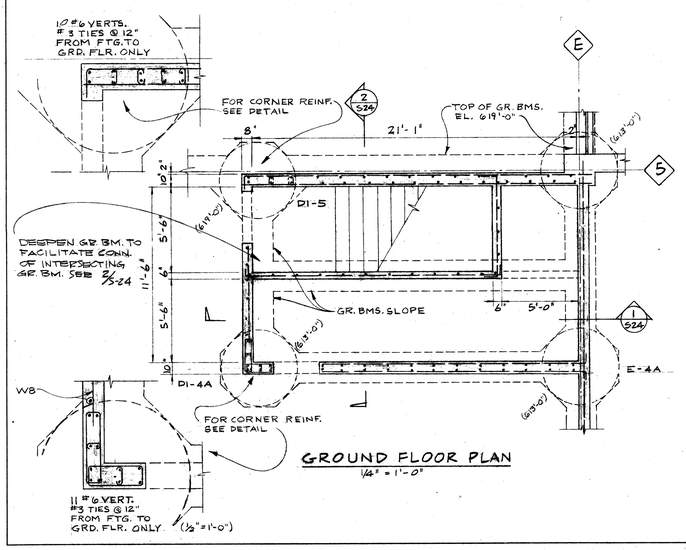
SHEET NO.
S-23



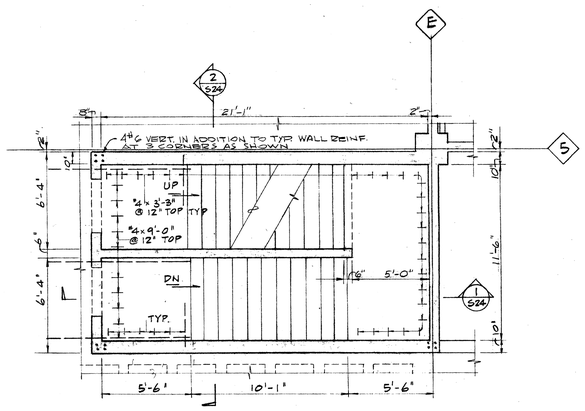
SECTION THRU STAIR #8 (1/524)
SCALE 1/4" = 1'-0"

SECTION (2/524)
1/4" = 1'-0"

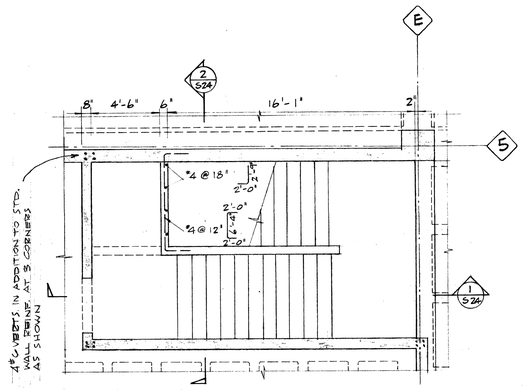
NOTES:
1. FOUNDATION PLAN SEE SHEET S-11.
2. ROOF PLAN SEE SHEET S-15.



GROUND FLOOR PLAN
1/4" = 1'-0"



FIRST FLOOR PLAN
1/4" = 1'-0"



SECOND FLOOR PLAN
1/4" = 1'-0"

C. V. BURGSTAHLER
STRUCTURAL ENGINEERS
4504 S. W. CORBETT
PORTLAND, OREGON 97201

JOB NO. 69-13.D | DATE JULY 1, 1970

REVISIONS

STAIR No. 8

PHASE II · HEALTH SCIENCES BUILDING

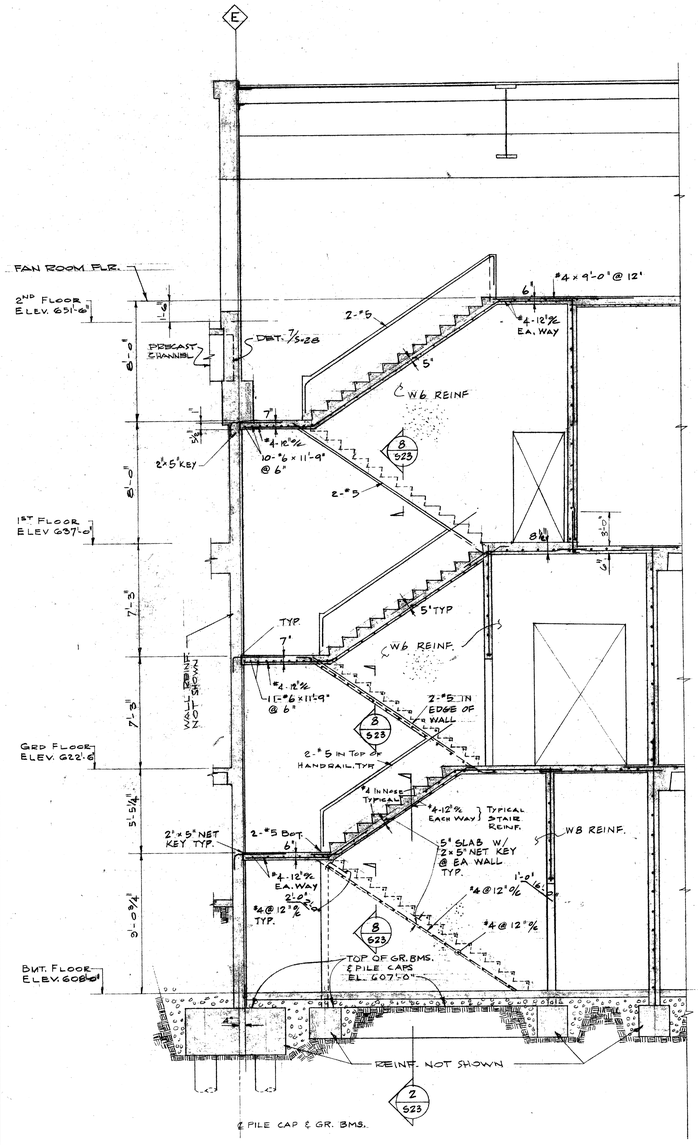
PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

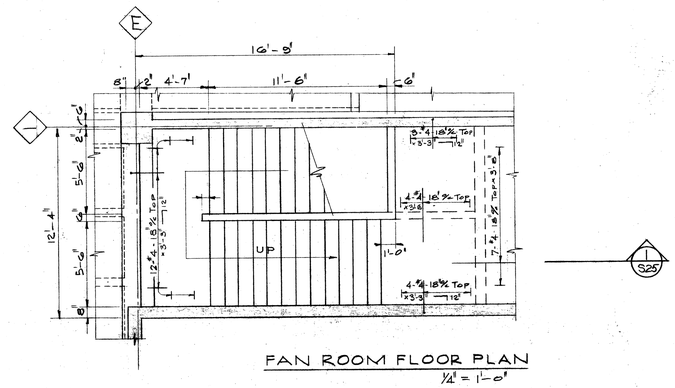
REGISTERED PROFESSIONAL ENGINEER
STATE OF OREGON

REGISTERED PROFESSIONAL ENGINEER
4326
EXPIRES: 12-31-70
SAMUEL M. HOLMES

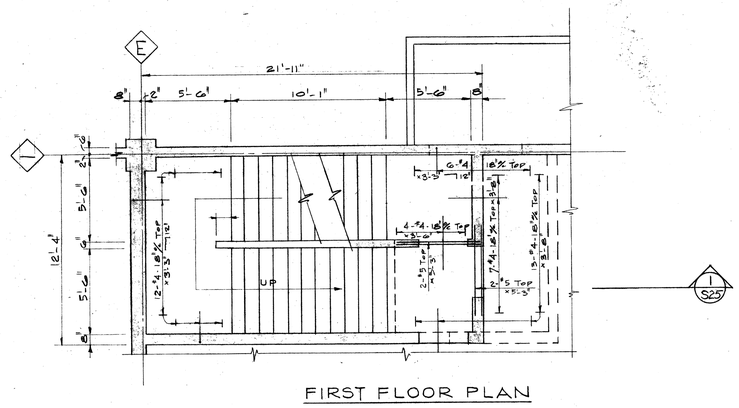
SHEET NO.
S-24



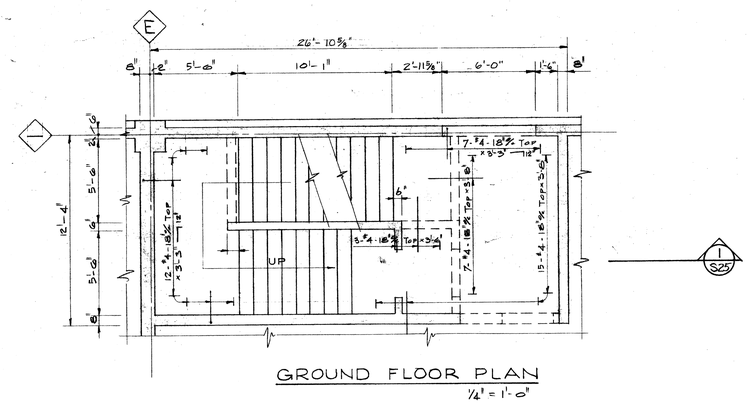
SECTION THRU STAIR #9 (1/S25)
SCALE 1/4" = 1'-0"



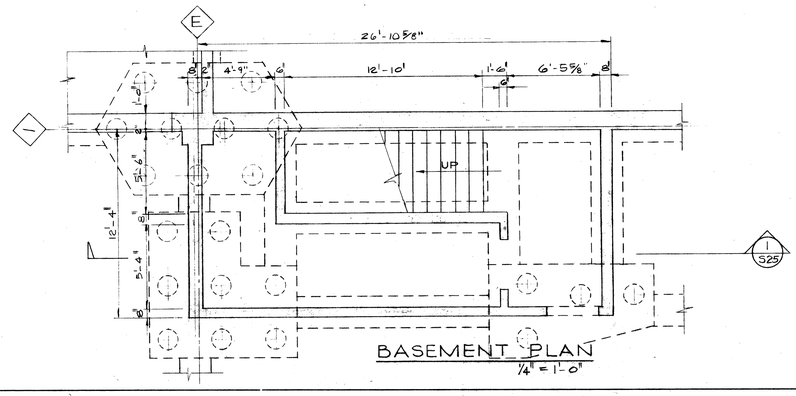
FAN ROOM FLOOR PLAN
1/4" = 1'-0"



FIRST FLOOR PLAN



GROUND FLOOR PLAN
1/4" = 1'-0"



BASEMENT PLAN
1/4" = 1'-0"

STAIR No. 9

PHASE III - HEALTH SCIENCES BUILDING

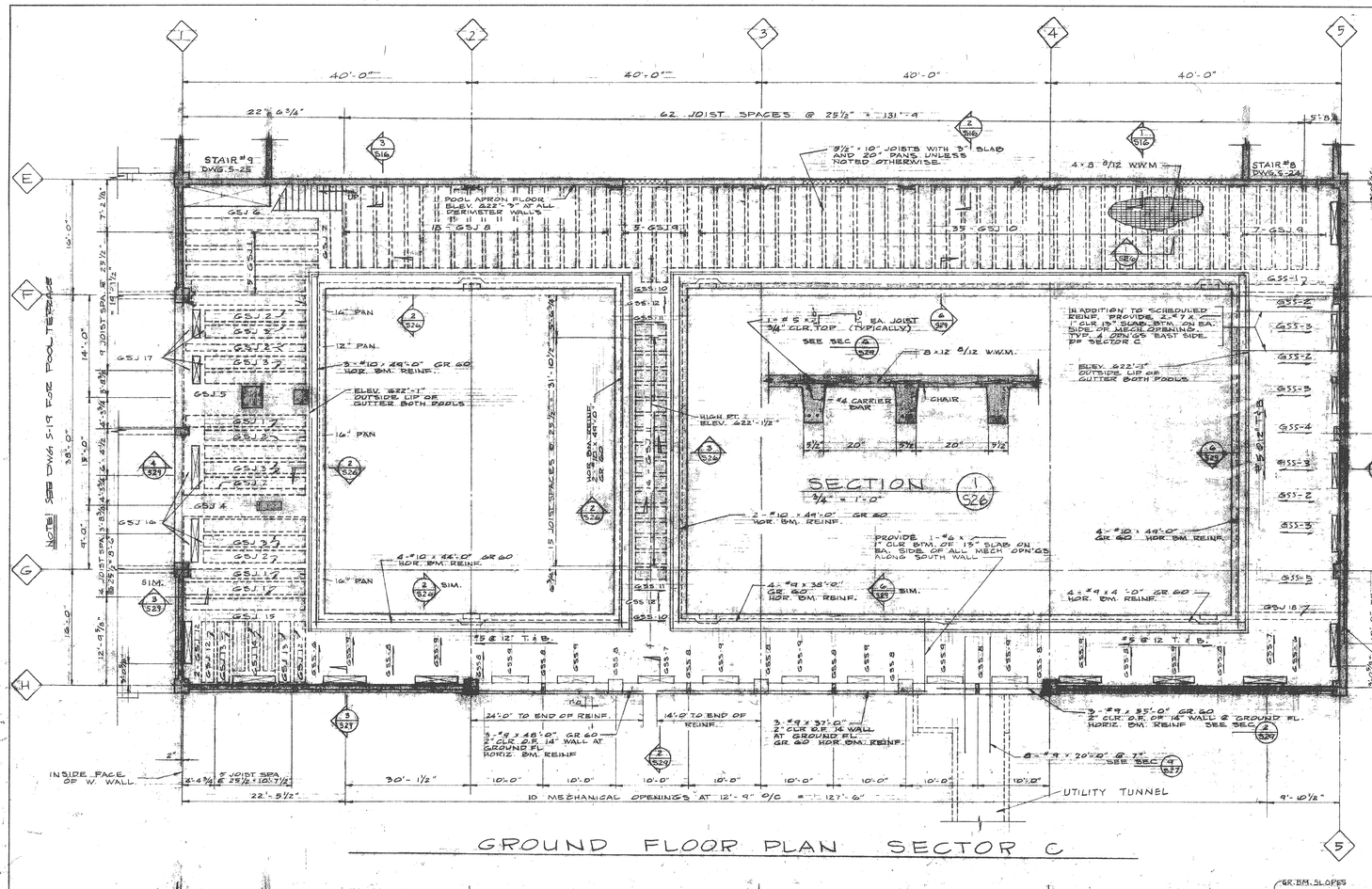
PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

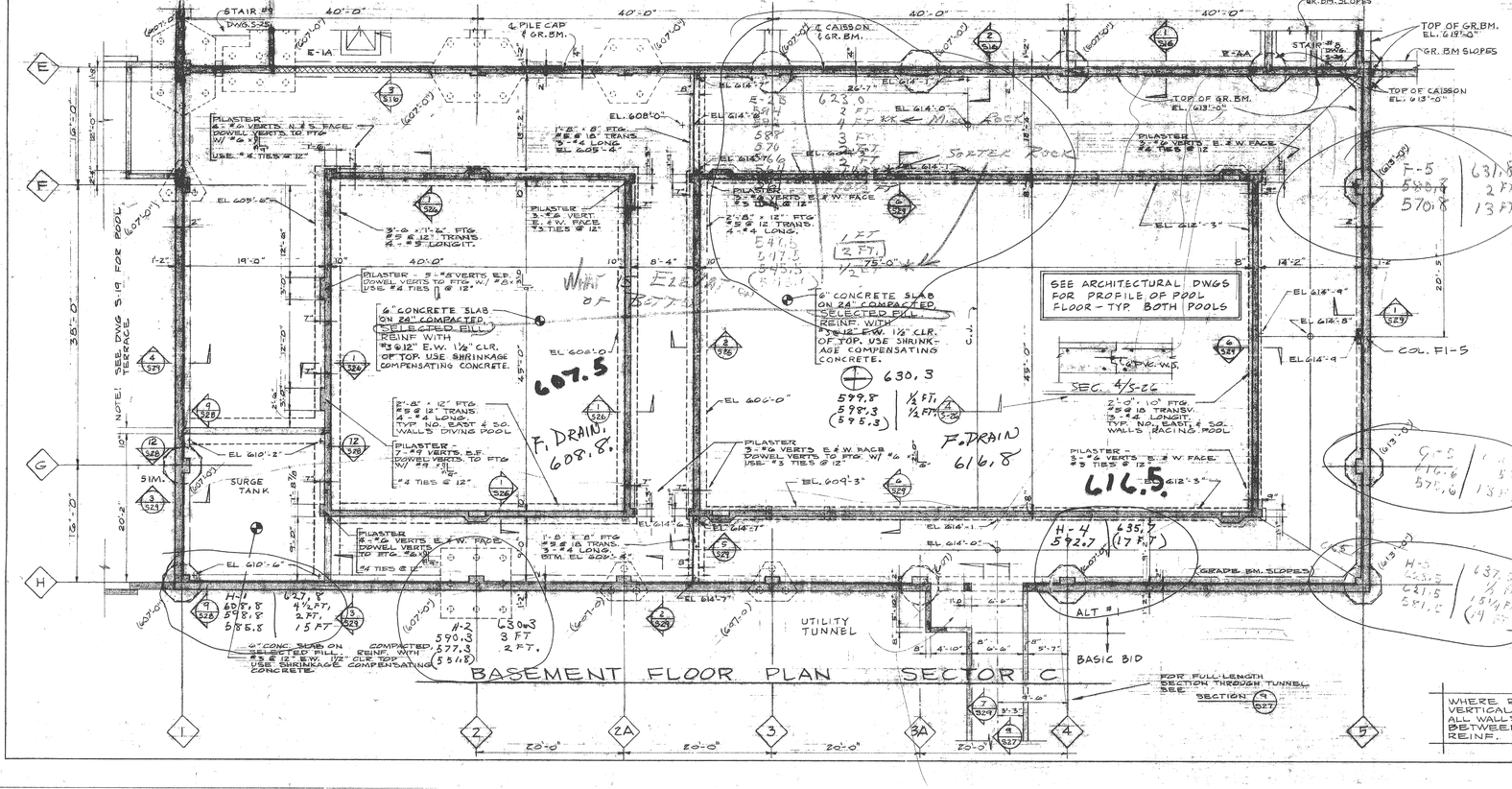
JOB NO. 69-18D
DATE JULY 1, 1970
REVISIONS

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

SHEET NO.
S-25

C. V. BURGSTAHLER
STRUCTURAL ENGINEERS
4504 S. W. CORBETT
PORTLAND, OREGON 97201





EXCEPT FOR UTILITY TUNNEL DRAWINGS ON THIS SHEET ARE NOT IN BASIC BID - SEE ALTERNATE NO. 1

SLAB AND JOIST SCHEDULE

MK.	SLAB & JOIST SIZE WIDTH	SLAB & JOIST SIZE DEPTH	REINFORCEMENT NO.	REINFORCEMENT SIZE	REINFORCEMENT BEND	REINFORCEMENT LOCATION	REINFORCEMENT STIRRUPS	REMARKS
GSJ 1	5½"	10"	2	7		BTM.	#4 @ 12" EA. END	FOR ADDITIONAL SLAB & JOIST REINF SEE GROUND FL. PLAN NOTES AND SECTIONS OF SHEET S-29
GSJ 2	8½"	"	3	7		BTM.	2 - #3 @ 5" EA. END	
GSJ 3	5½"	10"	2	6		BTM.		
GSJ 4	3'-0"	28"	6	6	0'-6" 2'-0"	TOP BTM.	#4 @ 12" CONT.	
GSJ 5	4'-1"	18"	7	6	0'-6" 2'-0"	TOP BTM.	#4 @ 12" CONT.	
GSJ 6	1'-7⅞"	10"	3	6	0'-6" 2'-0"	TOP BTM.	7 - #3 @ 12" EA. END	
GSJ 7	1'-9⅞"	10"	3	6	0'-6" 2'-0"	TOP BTM.	6 - #4 @ 5" EA. END	
GSJ 8	5½"	10"	2	5		BTM.		
GSJ 9	5½"	"	2	5		BTM.		
GSJ 10	8½"	"	2	5		BTM.		
GSJ 11	5½"		1	5		BTM.		
GSJ 12	5½"		1	5		BTM.		
GSJ 13	5½"		1	6		BTM	8 - #3 @ 5" EA. END	
GSJ 14	5½"		1	5				
GSJ 15	1'-8⅛"	"	4 8	6 6	0'-6" 2'-0" 1'-0" N	TOP BTM.	11 - #3 @ 5" EA. END	
GSJ 16	8	10"	1 2	5 4	8'-0"	TOP BTM		
GSJ 17	8"	10"	1 1	4 4	9' 19'	TOP BTM		
GSJ 18	1'-0"	15"	3 3	6 6	0'-6" 2'-0" 1'-0" N	TOP BTM	#4 @ 12" CONT.	
GSS 1	1'-1"	15"	5 8	6 6	0'-6" 2'-0"	TOP BTM	8 - #4 @ 6" EA. END	
GSS 2		13"	8 1	7		BTM		
GSS 3		13"	6	5		BTM		
GSS 4		13"	12	7		BTM.		
GSS 5		15"	18	7		BTM		
GSS 6	6'-0"	13"	7 5	6 6		TOP BTM		
GSS 7	5'-11	13	5 5	6 6		TOP BTM		
GSS 8	6'-6	15"	5	6		BTM		
GSS 9	5'-11	15"	15	5		BTM		
GSS 10	1'-0"	15"	2 2	5 7	2'-0" 2'-0"	TOP BTM		
GSS 11	4'-0"	15"	2	7		BTM		
GSS 12	8'-0"	15"	8 8	5 5		TOP BTM		FOR ADDITIONAL SLAB & JOIST REINF. SEE GROUND FL. PLAN NOTES AND SECTIONS OF SHEET S-29

WHERE REQ'D FOR CONSTRUCTION: VERTICAL C.J. IN FIRST STORY OF ALL WALLS SHALL BE MADE MIDWAY BETWEEN COLUMNS. HORIZ. WALL REINF. SHALL BE SPLICED @ COLS. ONLY.

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PHASE III - HEALTH SCIENCES BUILDING
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12000 SOUTHWEST 49TH AVENUE
PORTLAND, OREGON

FOUNDATION - BASEMENT - GRND. FLR. PLAN / SEC. C

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N.E. GLISAN STREET PORTLAND, OREGON

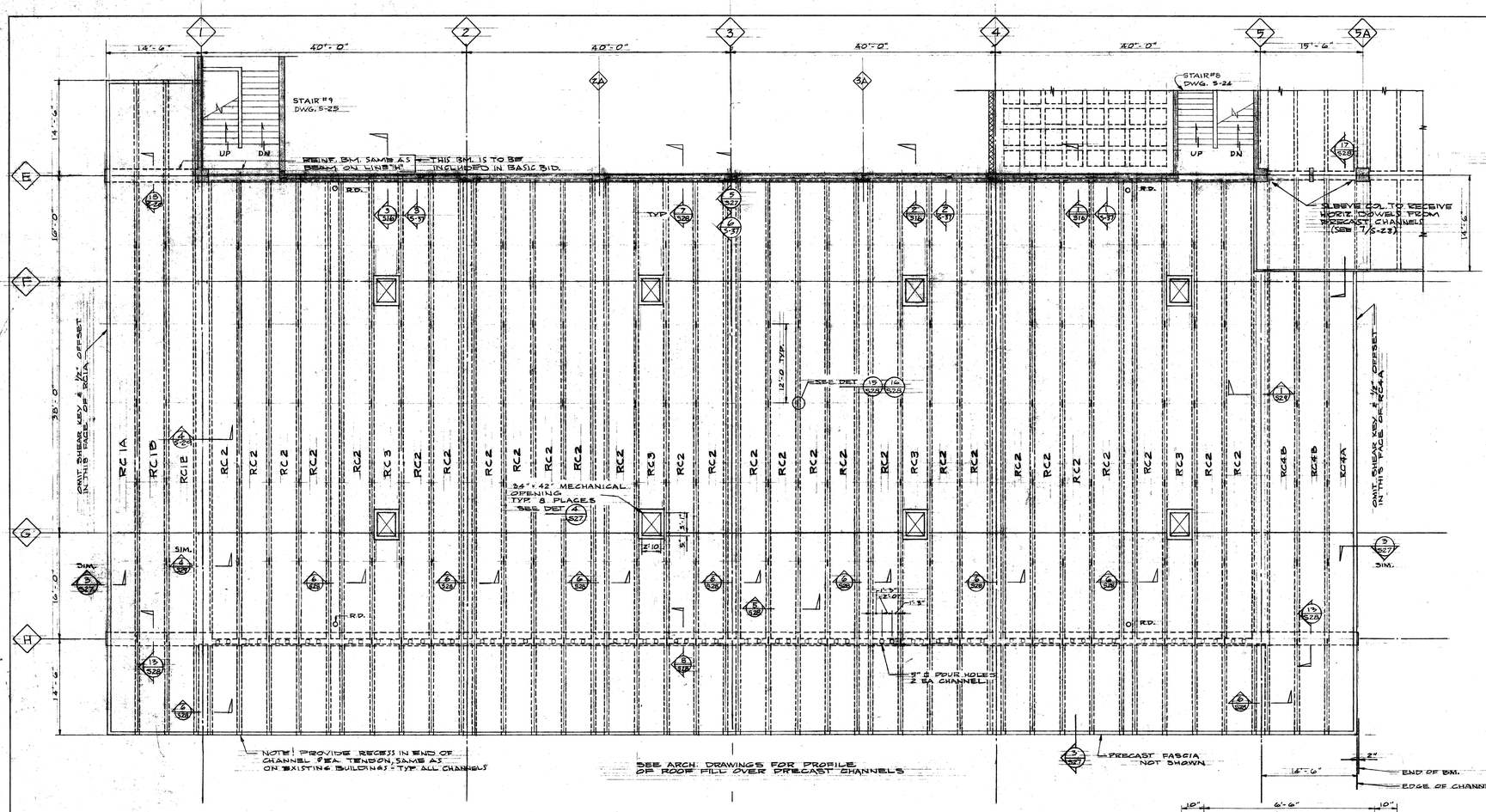
JOB NO. 69-13D DATE JULY 1976

REVISIONS

REGISTERED ARCHITECT
STATE OF OREGON

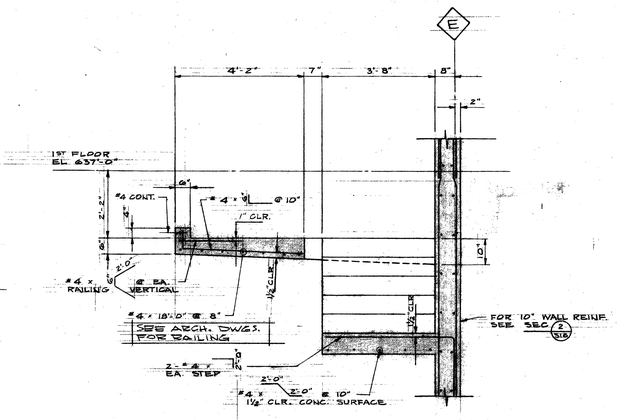
REGISTERED PROFESSIONAL ENGINEER
STATE OF OREGON
SAMUEL M. HUGHES

SHEET NO. S-26



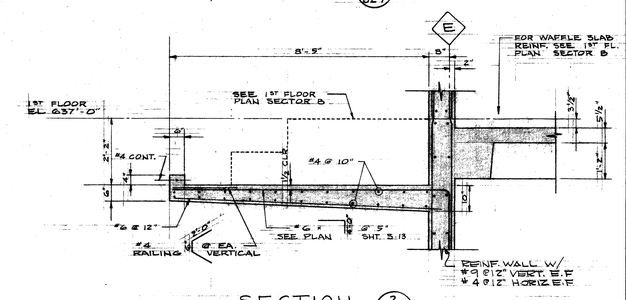
ROOF PLAN SECTOR C NOT IN BASIC BID SEE ALT. NO. 1

1/8" = 1'-0"



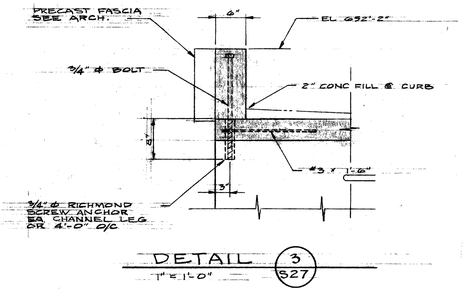
SECTION 1/S27

1/2" = 1'-0"



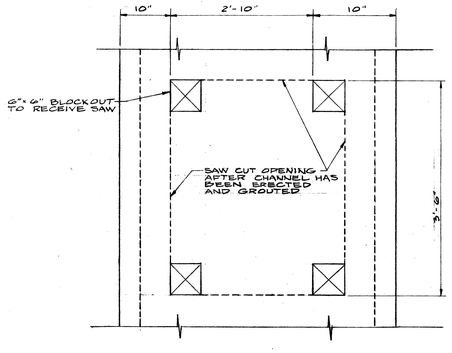
SECTION 2/S27

1/2" = 1'-0"



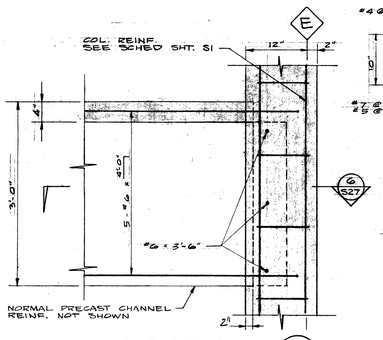
DETAIL 3/S27

1" = 1'-0"



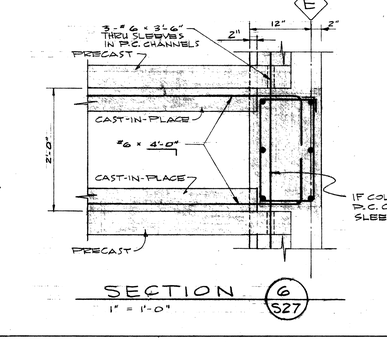
DETAIL 4/S27

1" = 1'-0"



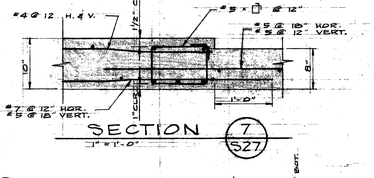
SECTION 5/S27

1" = 1'-0"



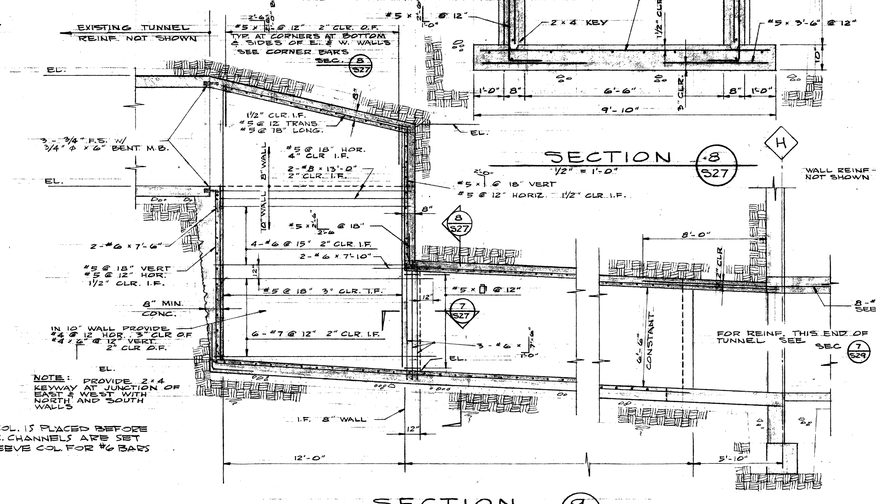
SECTION 6/S27

1" = 1'-0"



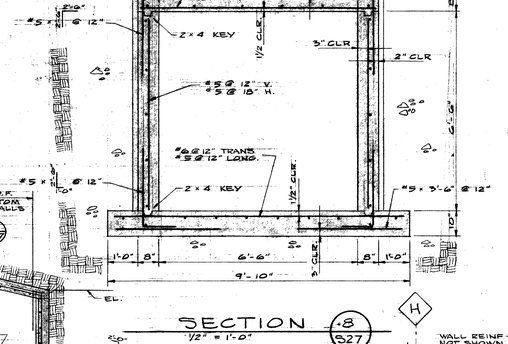
SECTION 7/S27

1" = 1'-0"



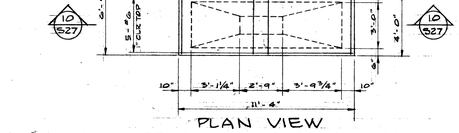
SECTION 9/S27

1/4" = 1'-0"



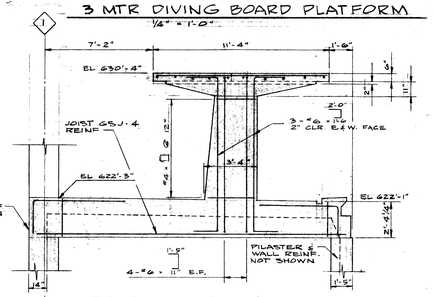
SECTION 8/S27

1/2" = 1'-0"



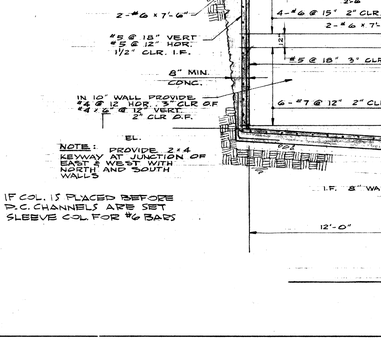
PLAN VIEW 3 MTR DIVING BOARD PLATFORM

1/4" = 1'-0"



3 MTR DIVING BOARD PLATFORM SECTION 10/S27

1/4" = 1'-0"



SECTIONS & DETAILS 1/S-27, 2/S-27, 3/S-27, 4/S-27, 5/S-27, 6/S-27 & 10/S-27 ARE NOT IN BASIC BID - SEE ALTERNATE NO. 1

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STRUCTURAL ENGINEERS
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PORTLAND, OREGON 97201

PHASE III - HEALTH SCIENCES BUILDING

ROOF PLAN & DETAILS / SECTOR "C"

DATE JULY 1, 1970

JOB NO. 69-13D

REVISIONS

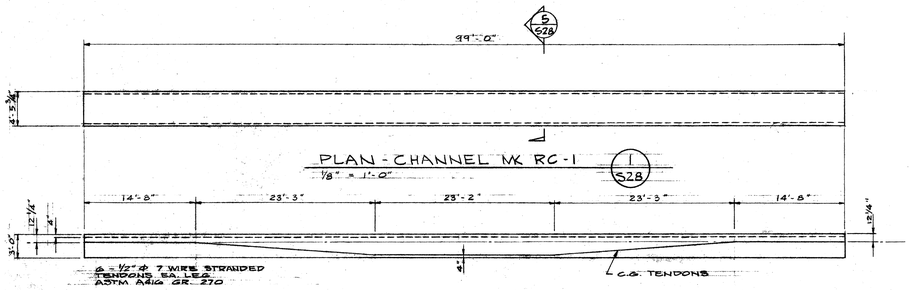
BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. ALISAN STREET PORTLAND, OREGON

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

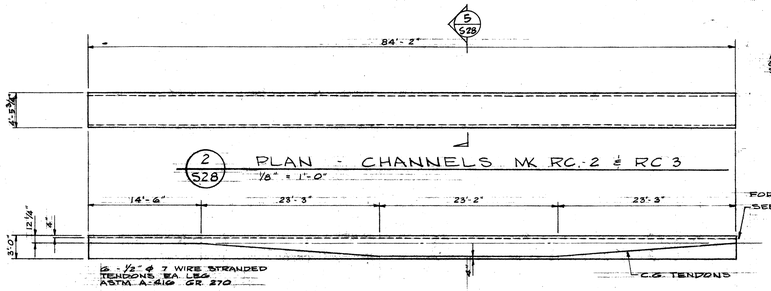
REGISTERED ARCHITECT
OREGON

REGISTERED PROFESSIONAL ENGINEER
4326
OREGON

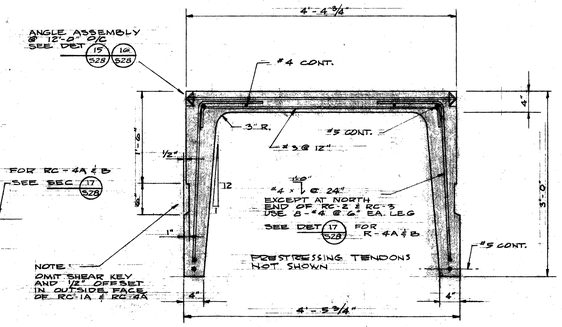
SHEET NO.
S-27



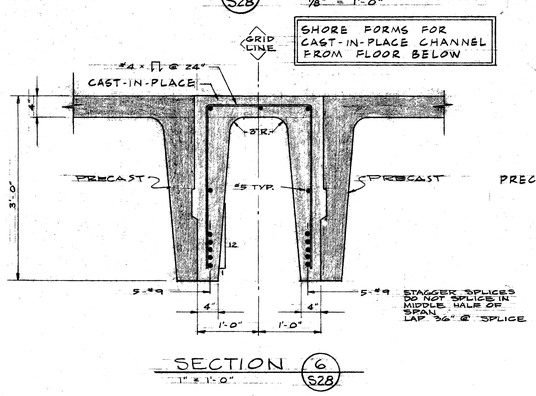
3 / 528 ELEVATION - CHANNEL MK RC-1A & RC-1B
1/8" = 1'-0"



2 / 528 ELEVATION - CHANNELS MK RC-2, RC-3, RC-4A, & RC-4B
1/8" = 1'-0"

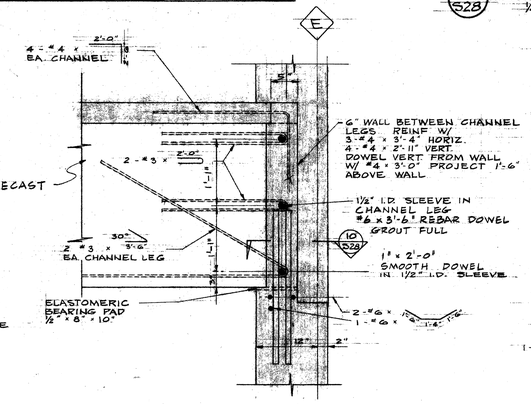


SECTION 5 / 528
1" = 1'-0"

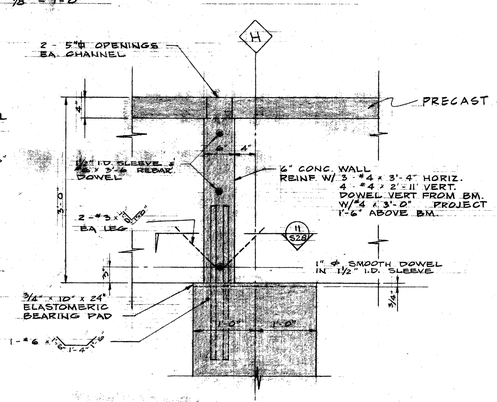


SECTION 6 / 528
1" = 1'-0"

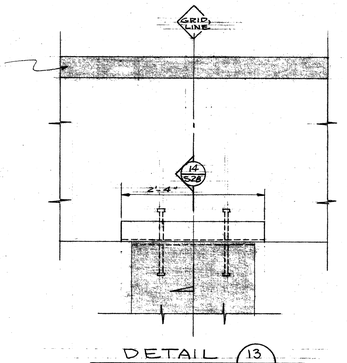
SHORE FORMS FOR CAST-IN-PLACE CHANNEL FROM FLOOR BELOW



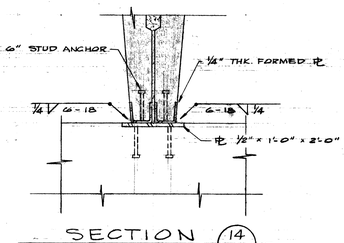
DETAIL 7 / 528
1" = 1'-0"



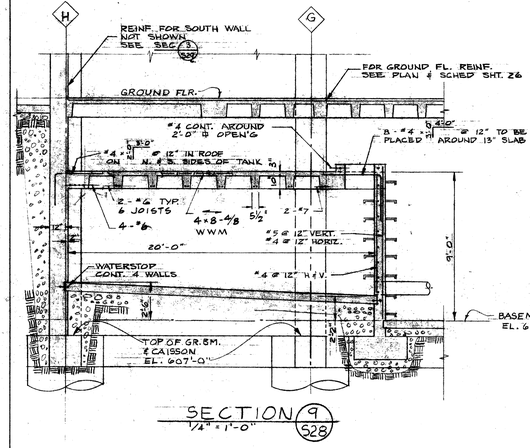
DETAIL 8 / 528
1" = 1'-0"



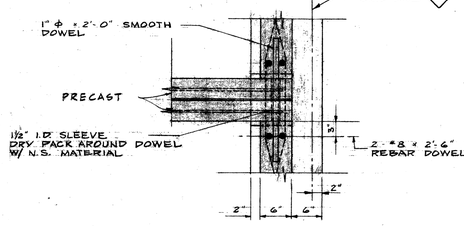
DETAIL 13 / 528
1" = 1'-0"



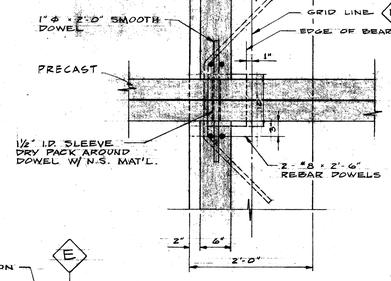
SECTION 14 / 528
1" = 1'-0"



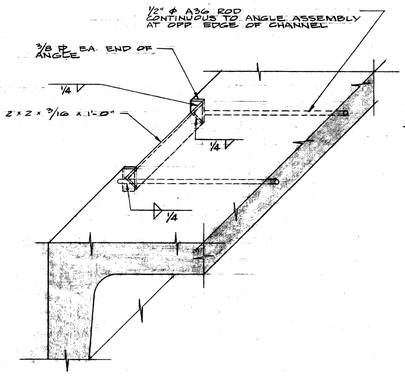
SECTION 9 / 528
1/4" = 1'-0"



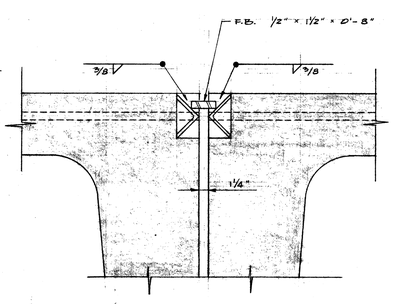
SECTION 10 / 528
1" = 1'-0"



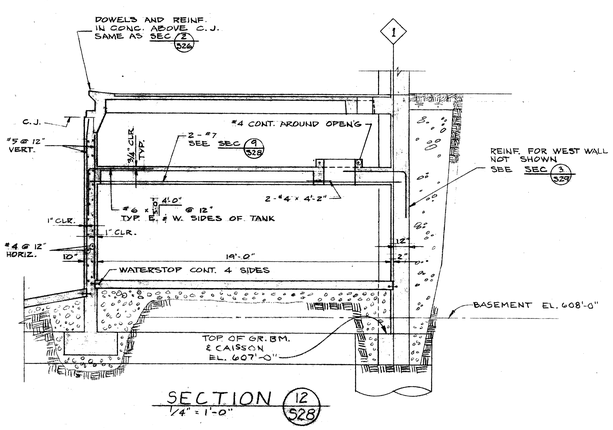
SECTION 11 / 528
1" = 1'-0"



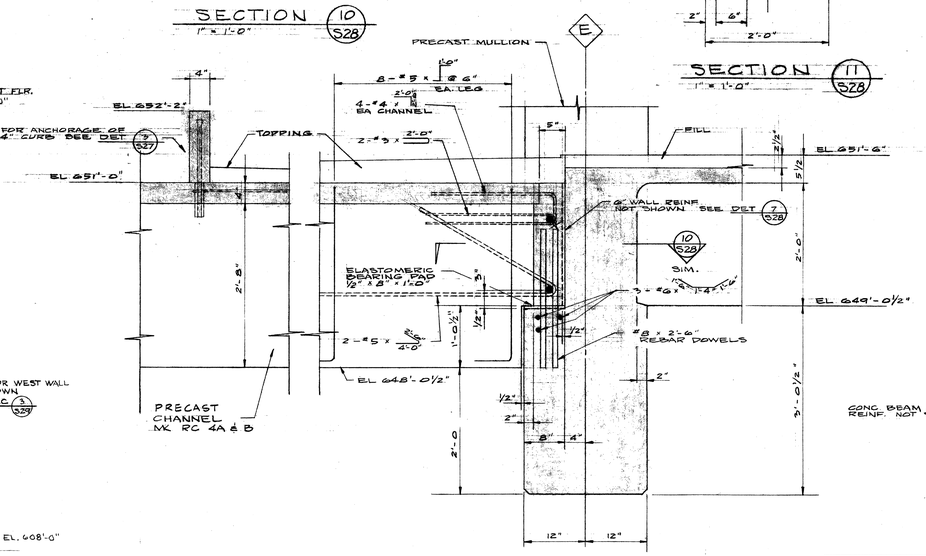
DETAIL 15 / 528



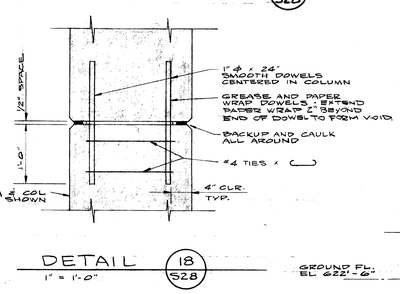
DETAIL 16 / 528
3" = 1'-0"



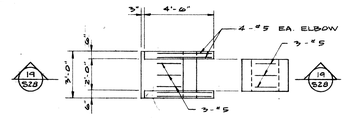
SECTION 12 / 528
1/4" = 1'-0"



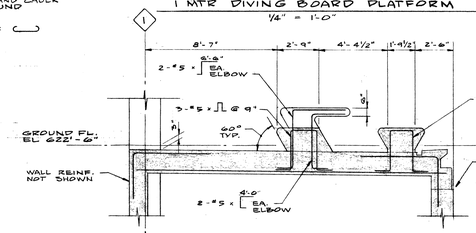
SECTION 17 / 528
1" = 1'-0"



DETAIL 18 / 528
1" = 1'-0"



PLAN VIEW
1 MTR DIVING BOARD PLATFORM
1/4" = 1'-0"



1 MTR DIVING BOARD PLATFORM
SECTION 19 / 528
1/4" = 1'-0"

EXCEPT FOR 13 & 14 SECTIONS & DETAILS ON THIS SHEET ARE NOT IN BASIC BID SEE ALT #1

C. V. BURGTSTALLER
STRUCTURAL ENGINEERS
4504 S. W. CORBETT
PORTLAND, OREGON 97201

PHASE III - HEALTH SCIENCES BUILDING
SECTIONS & DETAILS / SECTOR C

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

JOB NO. 69-13-D
DATE JULY 1, 1970
REVISIONS

Registered Professional Engineer
4326
Samuel M. Holmes
OREGON

SHEET NO.
S-28

SECTION 1 / 1/2" = 1'-0" (S29)

SECTION 2 / 1/2" = 1'-0" (S29)

SECTION 3 / 1/2" = 1'-0" (S29)

SECTION 4 / 1/2" = 1'-0" (S29)

SECTION 5 / 1" = 1'-0" (S29)

SECTION 6 / 1" = 1'-0" (S29)

SECTION 7 / 1/2" = 1'-0" (S29)

SECTION 8 / 1/2" = 1'-0" (S29)

SECTION 9 / 1/2" = 1'-0" (S29)

SECTIONS & DETAILS ON THIS SHEET ARE NOT IN BASIC BID SEE ALTERNATE NO. 1.

C. V. BURGSTAHLER
STRUCTURAL ENGINEERS
4504 S. W. CORBETT
PORTLAND, OREGON 97201

REVISIONS

JOB NO. 69-18-D

DATE JULY 1, 1970

PHASE III - HEALTH SCIENCES BUILDING

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND, OREGON

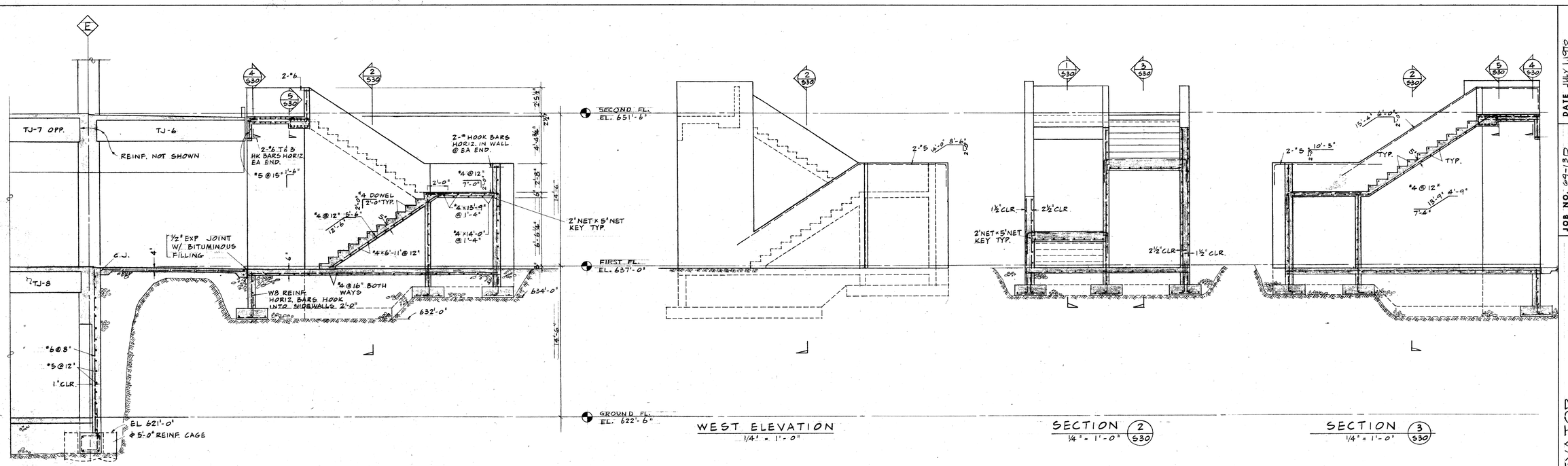
BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
ASSOCIATE ARCHITECTS
PETERSON & SMITH
5502 N. E. GLISAN STREET
PORTLAND, OREGON

WALL SECTIONS / SECTOR C

REGISTERED ARCHITECT
PORTLAND, OREGON
STATE OF OREGON

REGISTERED PROFESSIONAL ENGINEER
4326
OREGON
OCT. 24, 1969
SAMUEL M. HOLDREN

SHEET NO.
S-29

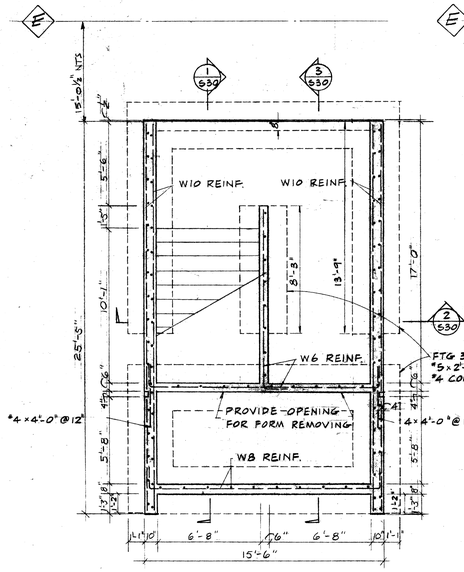


SECTION THRU STAIR NO. 1 (1/530)
SCALE 1/4" = 1'-0"

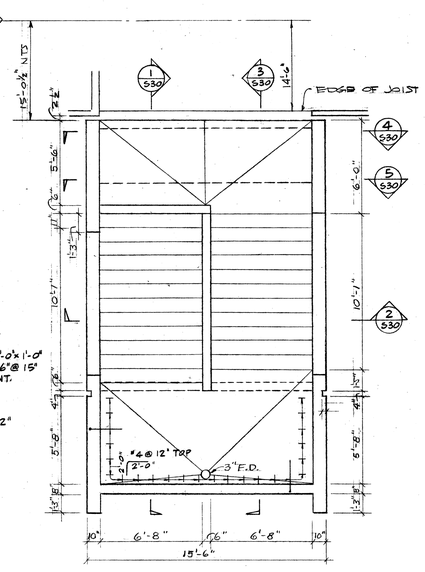
WEST ELEVATION
1/4" = 1'-0"

SECTION (2/530)
1/4" = 1'-0"

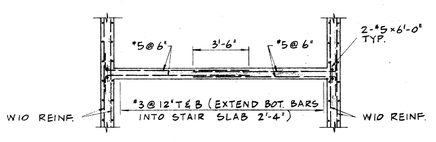
SECTION (3/530)
1/4" = 1'-0"



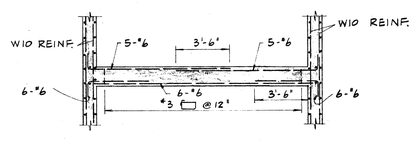
FIRST FLOOR PLAN
SCALE 1/4" = 1'-0"



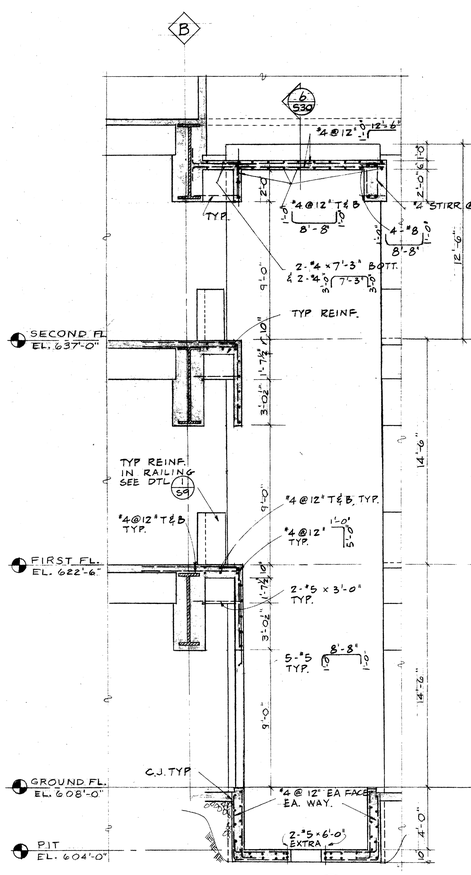
SECOND FLOOR PLAN
SCALE 1/4" = 1'-0"



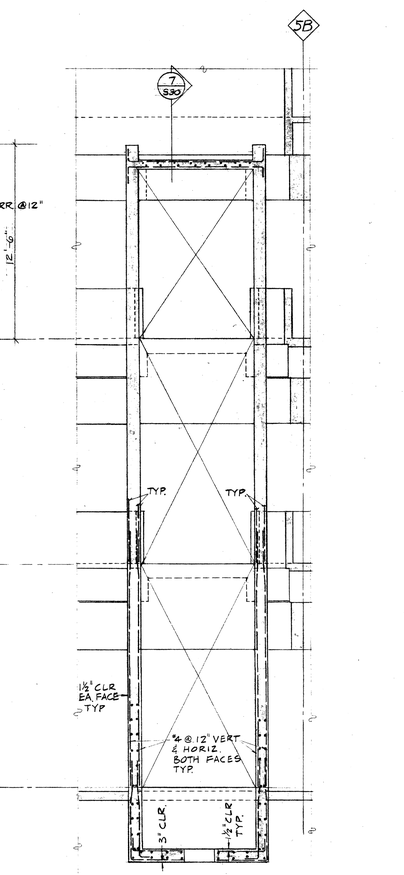
SECTION (4/530)
1/4" = 1'-0"



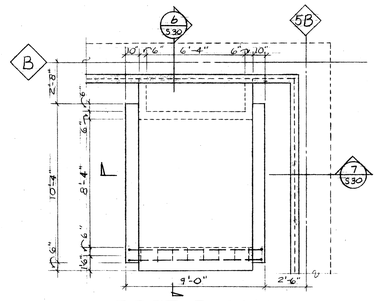
SECTION (5/530)
1/4" = 1'-0"



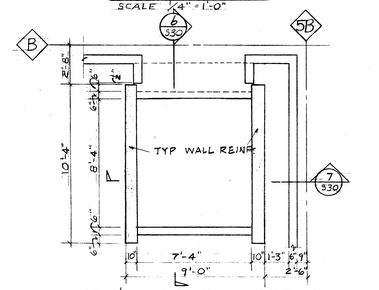
SECTION THRU ELEVATOR (6/530)
SCALE 1/4" = 1'-0"



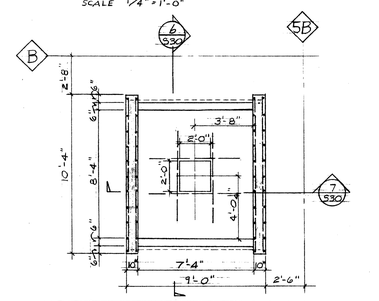
SECTION THRU ELEVATOR (7/530)
SCALE 1/4" = 1'-0"



ROOF PLAN
SCALE 1/4" = 1'-0"



FIRST & SECOND FLOOR PLAN
SCALE 1/4" = 1'-0"



GROUND FLOOR PLAN
SCALE 1/4" = 1'-0"

C. V. SUNGSTAHLER
STRUCTURAL ENGINEERS
4504 N. W. CORBETT
PORTLAND, OREGON 97201

PHASE III-HEALTH SCIENCES BUILDING
STAIR No. 1 & ELEVATOR

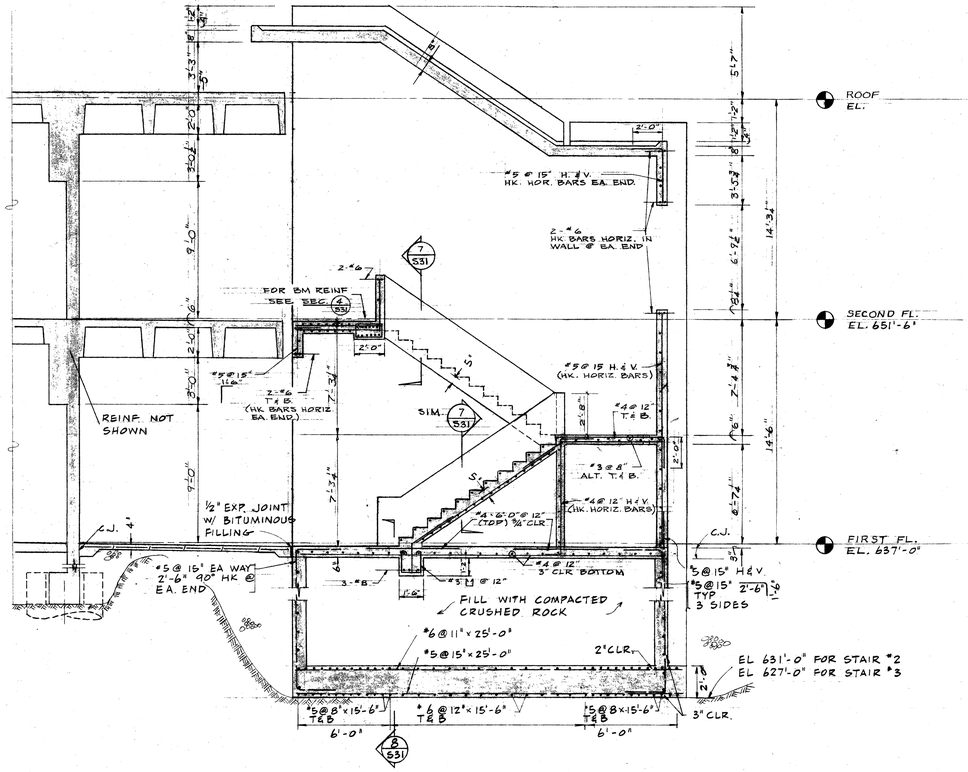
PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

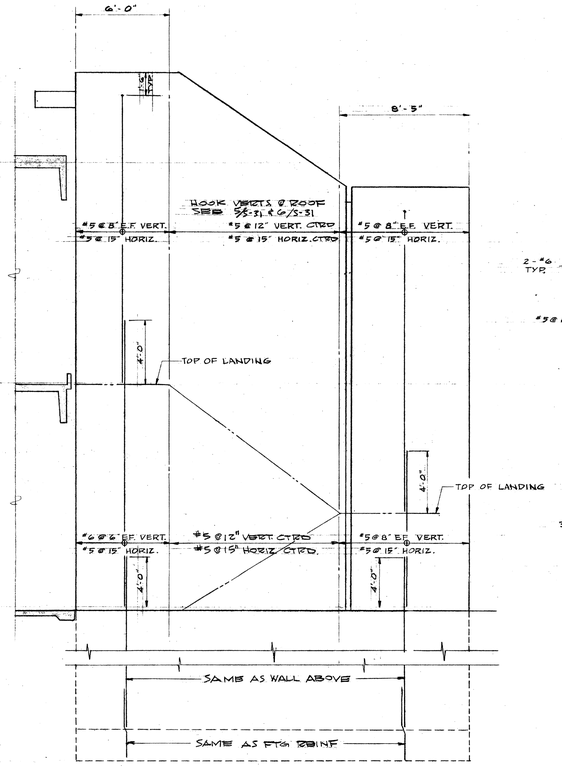
JOB NO. 69-13D
DATE JULY 1, 1970
REVISIONS

Registered Professional Engineer
State of Oregon
Samuel M. Bloodworth
Expires 6-30-71

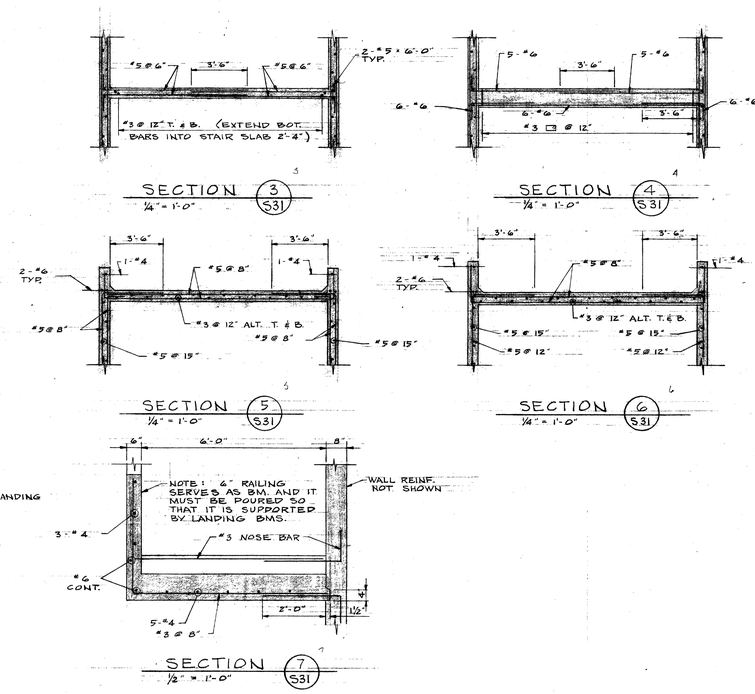
SHEET NO.
S-30

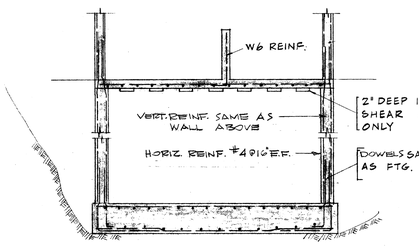


SECTION THRU STAIR #2 & #3 (1/S31)
SCALE 1/4" = 1'-0"

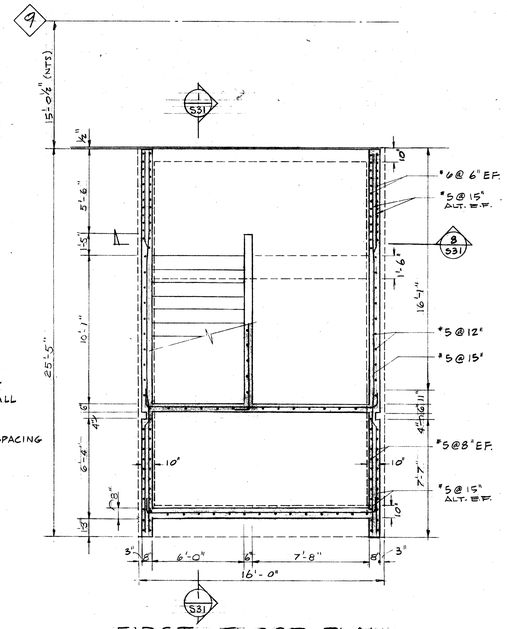


SIDE ELEVATION (2/S31)
SCALE 1/4" = 1'-0"

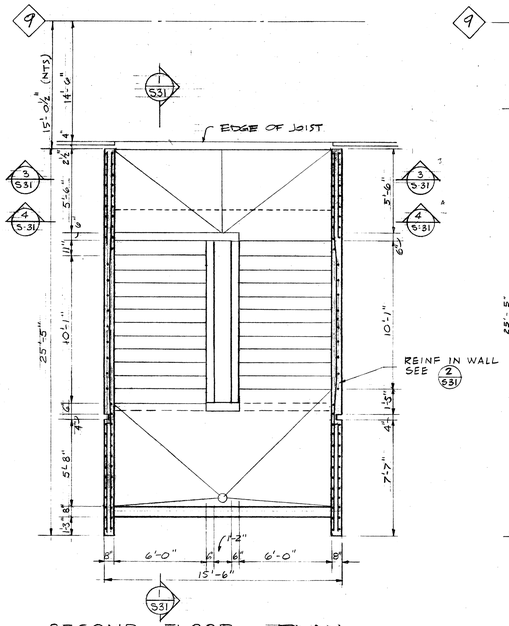




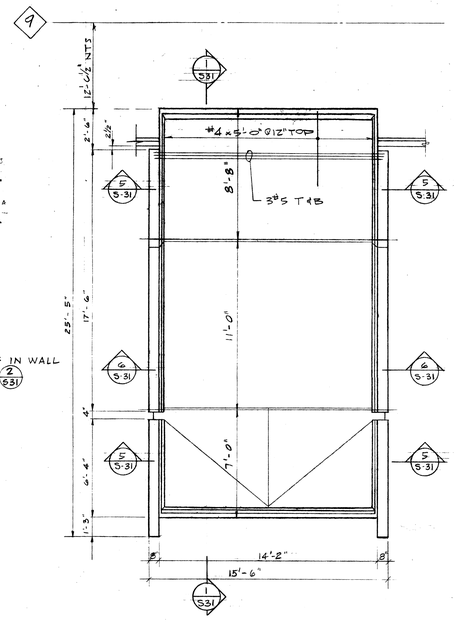
SECTION (8/S31)
SCALE 1/4" = 1'-0"



FIRST FLOOR PLAN
SCALE 1/4" = 1'-0"



SECOND FLOOR PLAN
SCALE 1/4" = 1'-0"



ROOF PLAN
SCALE 1/4" = 1'-0"

C. V. BURGSTAHLER
STRUCTURAL ENGINEERS
4104 S. W. CORBETT
PORTLAND, OREGON 97201

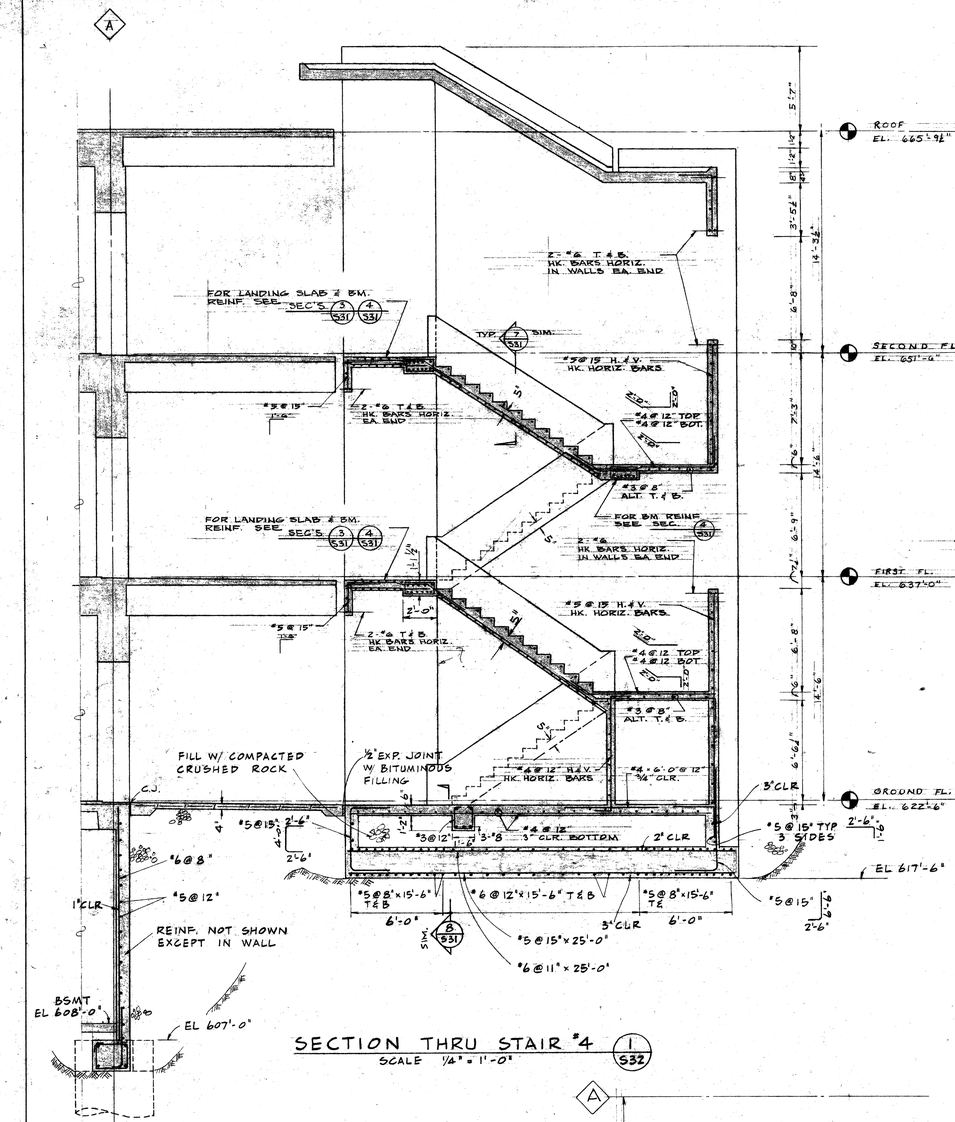
PHASE III - HEALTH SCIENCES BUILDING
STAIRS No. 2 & 3
DATE JULY 1, 1970
JOB NO. 69-13D
REVISIONS

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

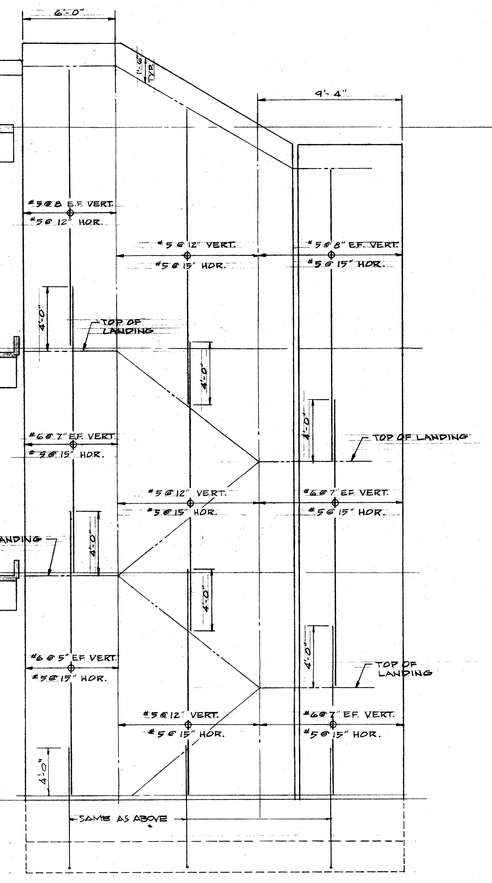
BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

REGISTERED PROFESSIONAL ENGINEER #328 OREGON

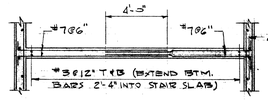
SHEET NO.
S-31



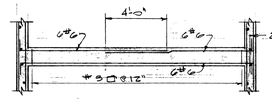
SECTION THRU STAIR #4 (1/S32)
SCALE 1/4" = 1'-0"



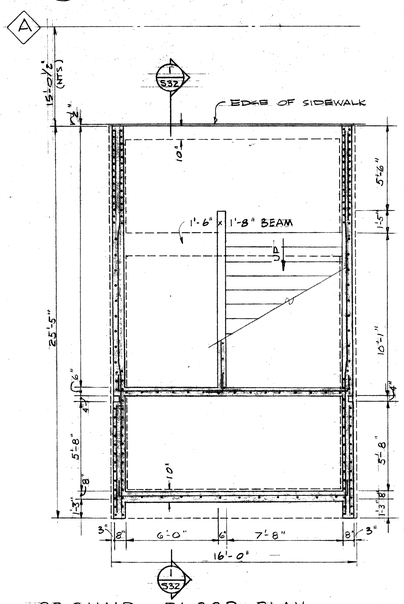
ELEVATION (2/S32)
SCALE 1/4" = 1'-0"



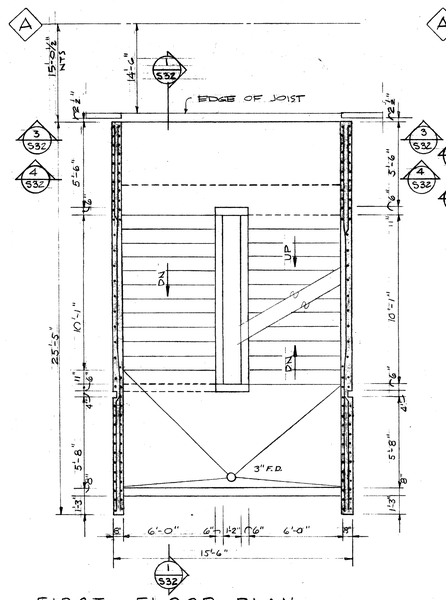
SECTION (3/S32)
1/4" = 1'-0"



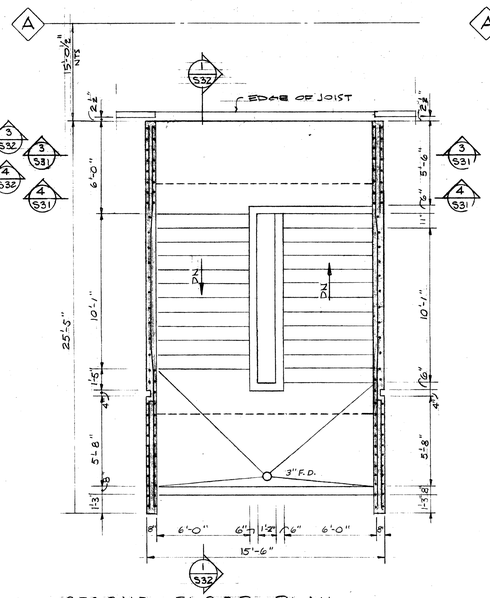
SECTION (4/S32)
1/2" = 1'-0"



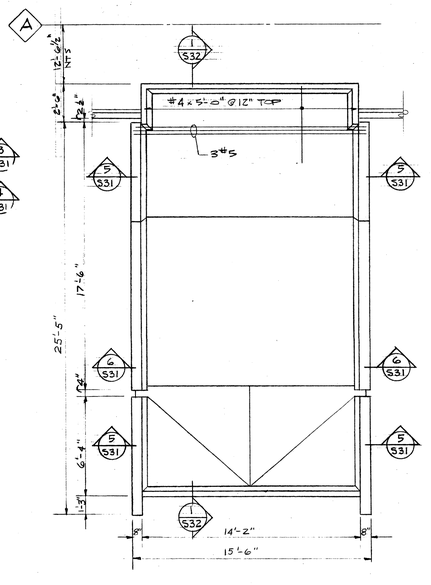
GROUND FLOOR PLAN
SCALE 1/4" = 1'-0"



FIRST FLOOR PLAN
SCALE 1/4" = 1'-0"



SECOND FLOOR PLAN
SCALE 1/4" = 1'-0"



ROOF PLAN
SCALE 1/4" = 1'-0"

C. V. SUHOSTAHLER
STRUCTURAL ENGINEERS
4504 S. W. CORBETT
PORTLAND, OREGON 97201

JOB NO. 89-130 DATE JULY 5, 1990

REVISIONS

STAIR No. 4

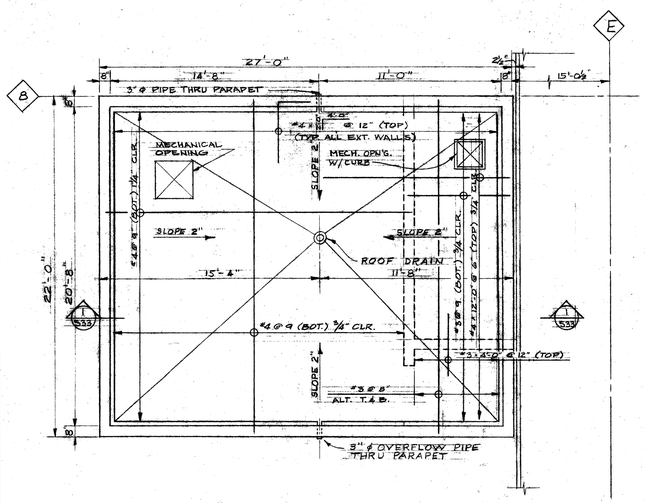
PHASE III - HEALTH SCIENCES BUILDING

BEAR, McNEIL, BLOODWORTH & HAWES ARCHITECTS
PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

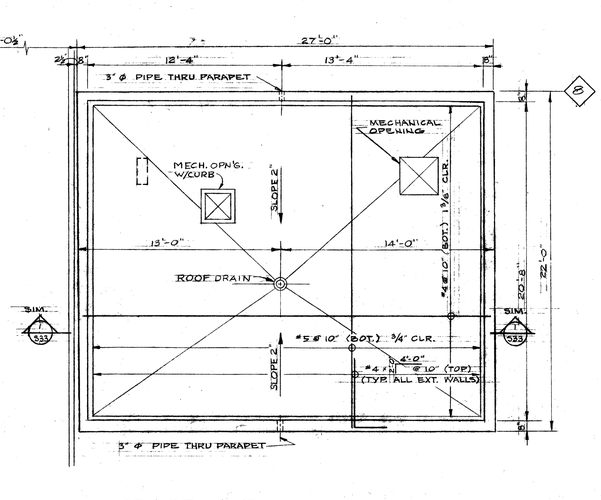
PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

REGISTERED PROFESSIONAL ENGINEER 4326 OREGON JULY 24, 1990 SAMUEL M. HOLMES

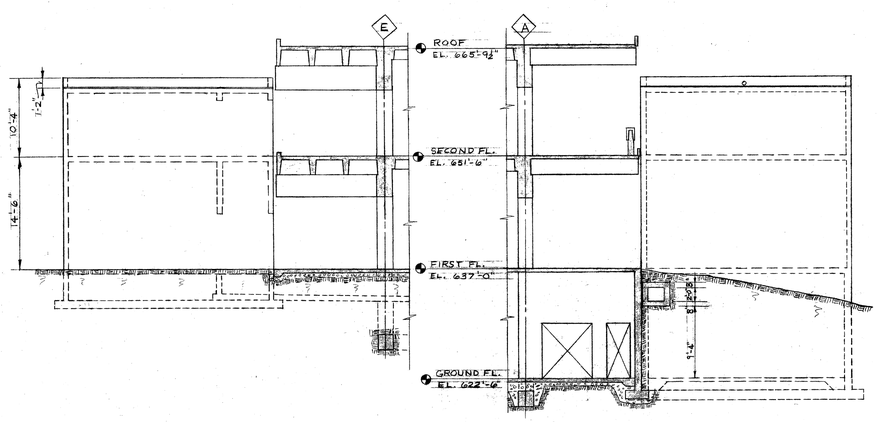
SHEET NO.
S-32



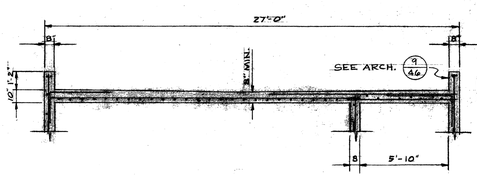
ROOF - SOUTH TOWER
SCALE ¼" = 1'-0"



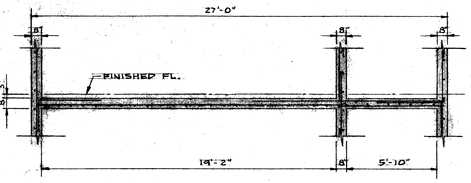
ROOF - NORTH TOWER
SCALE ¼" = 1'-0"



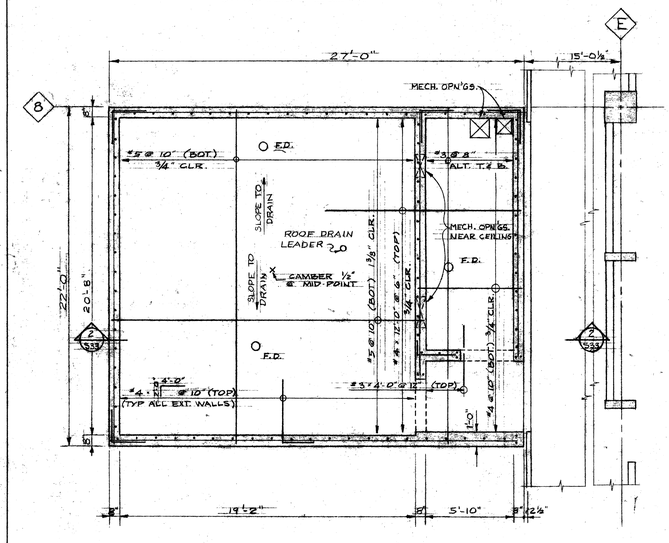
EAST ELEVATIONS
SCALE ¼" = 1'-0"



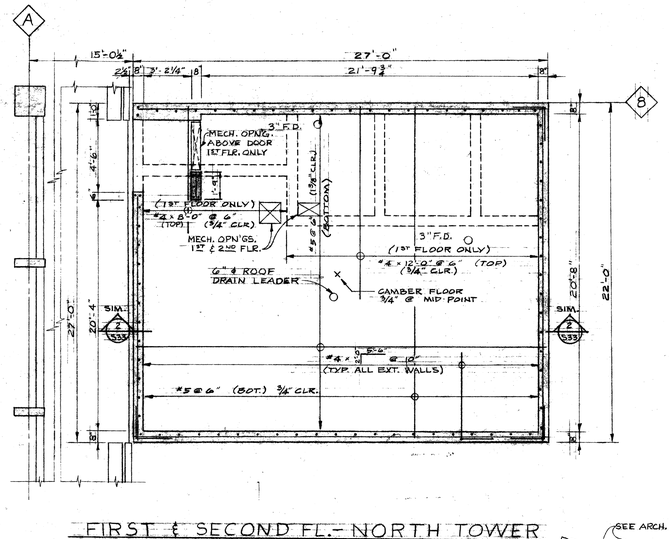
SECTION 1/533
SCALE ¼" = 1'-0"



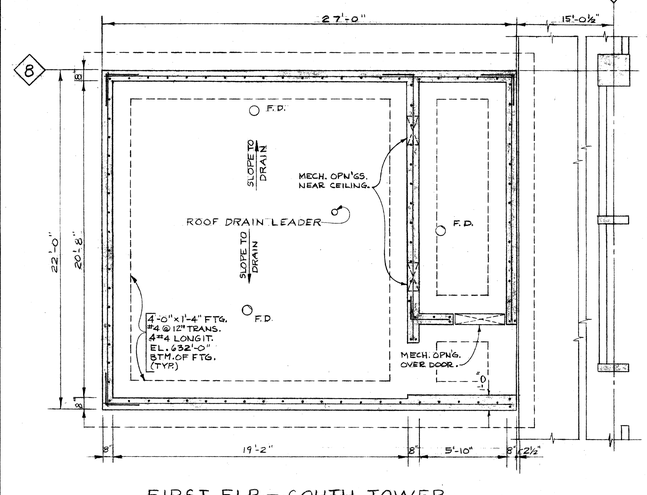
SECTION 2/533
SCALE ¼" = 1'-0"



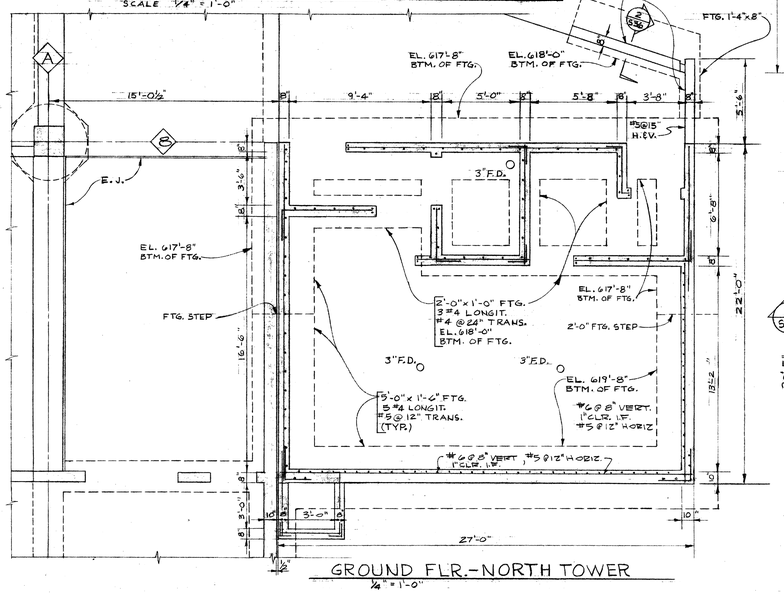
SECOND FLR. - SOUTH TOWER
SCALE ¼" = 1'-0"



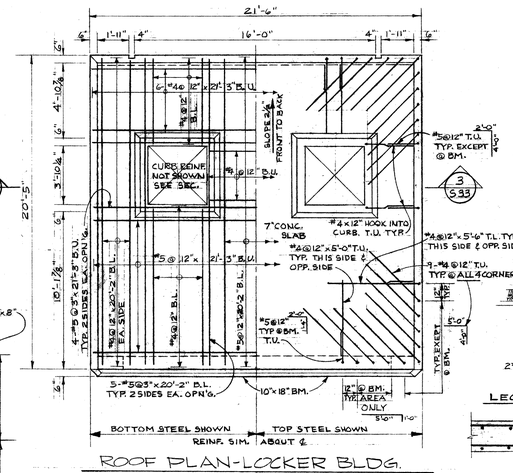
FIRST & SECOND FL. - NORTH TOWER
SCALE ¼" = 1'-0"



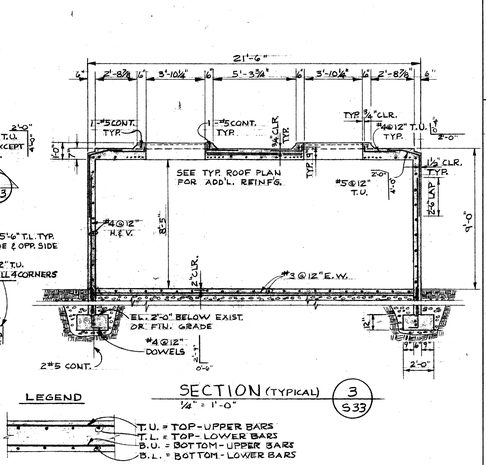
FIRST FLR. - SOUTH TOWER
SCALE ¼" = 1'-0"

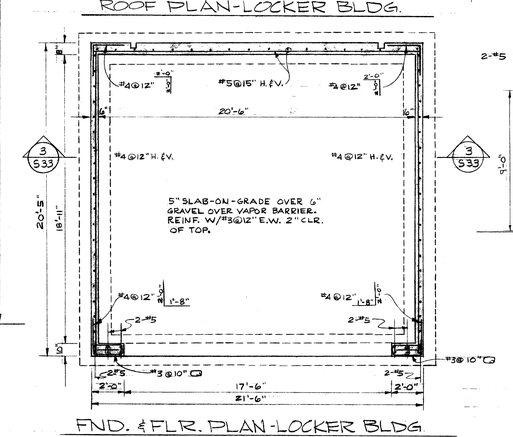


GROUND FLR. - NORTH TOWER
¼" = 1'-0"

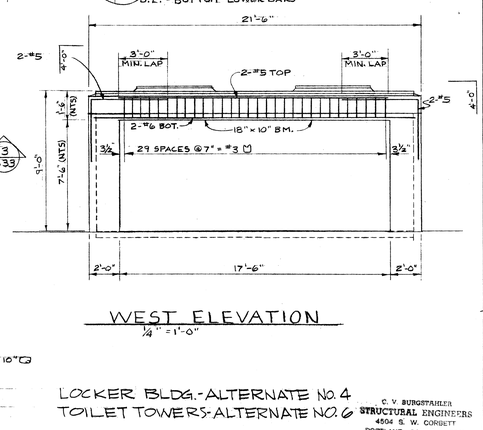


ROOF PLAN-LOCKER BLDG.





FND. & FLR. PLAN-LOCKER BLDG.



WEST ELEVATION
¼" = 1'-0"

LOCKER BLDG. - ALTERNATE NO. 4
TOILET TOWERS - ALTERNATE NO. 6

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PHASE III - HEALTH SCIENCES BUILDING
TOILET TOWERS & LOCKER BUILDINGS

JOB NO. 69-13D
DATE JULY 1, 1970

REVISIONS

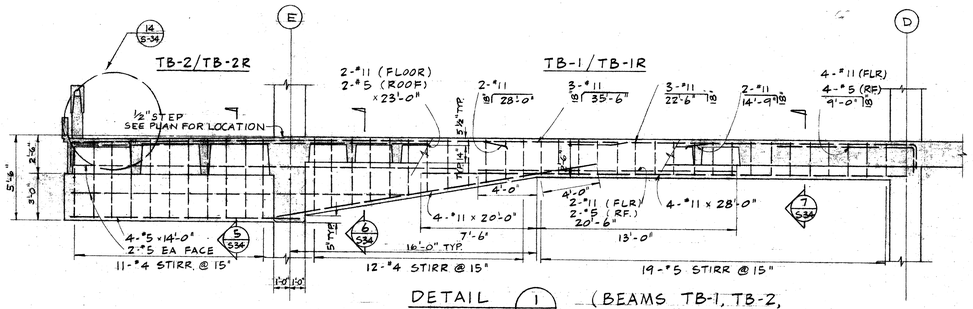
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PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

PORTLAND COMMUNITY COLLEGE
12000 SOUTHWEST 49TH AVENUE
PORTLAND OREGON

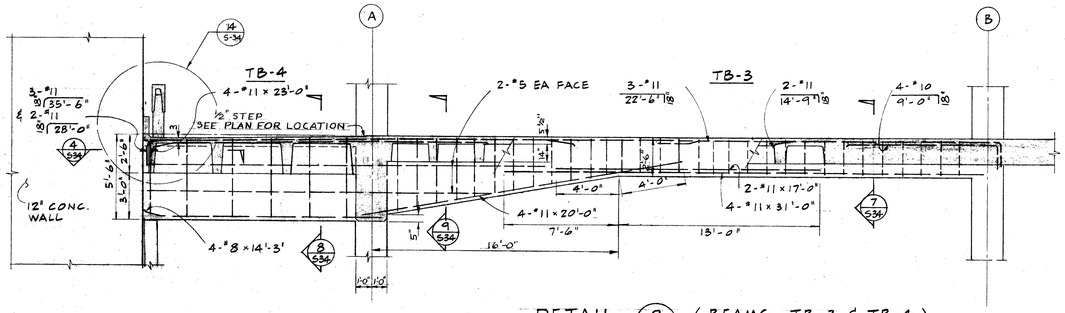
REGISTERED PROFESSIONAL ENGINEER
STATE OF OREGON

REGISTERED PROFESSIONAL ENGINEER
4326
OREGON
JULY 24, 1970
SAMUEL M. HUANG

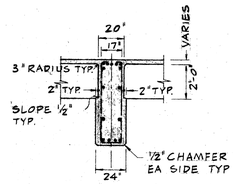
SHEET NO.
S-33



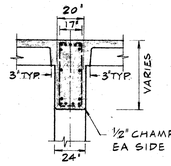
DETAIL 1 / S34 — 1/4" = 1'-0" (BEAMS TB-1, TB-2, TB-1R & TB-2R)



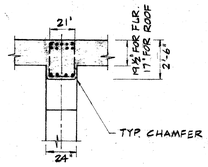
DETAIL 2 / S34 — 1/4" = 1'-0" (BEAMS TB-3 & TB-4)



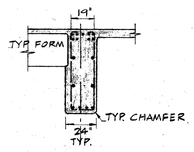
SECTION 5 / S34 — 1/4" = 1'-0"



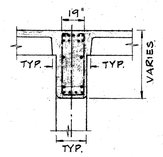
SECTION 6 / S34 — 1/4" = 1'-0"



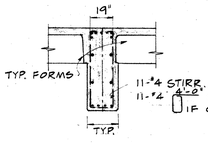
SECTION 7 / S34 — 1/4" = 1'-0"



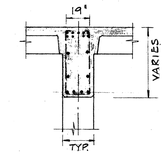
SECTION 8 / S34 — 1/4" = 1'-0"



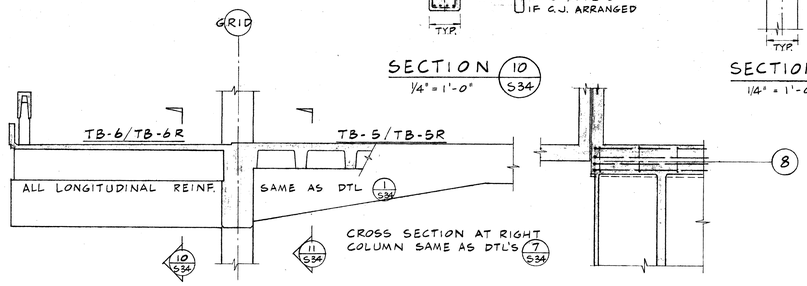
SECTION 9 / S34 — 1/4" = 1'-0"



SECTION 10 / S34 — 1/4" = 1'-0"

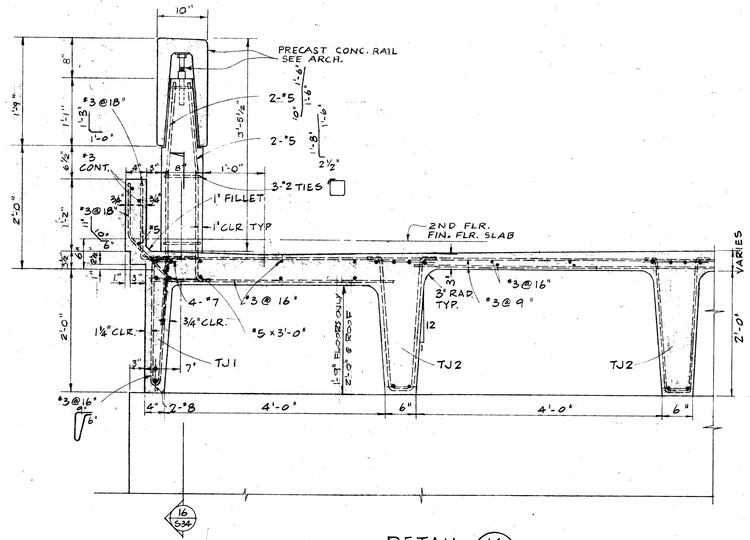


SECTION 11 / S34 — 1/4" = 1'-0"

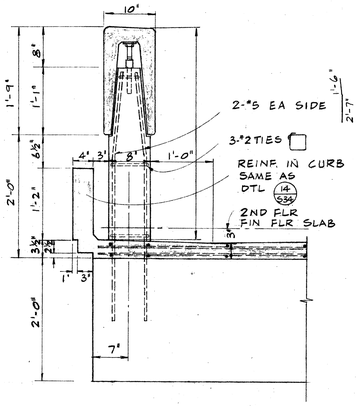


DETAIL 3 / S34 — 1/4" = 1'-0" (BEAMS TB-5, TB-6, TB-5R & TB-6R)

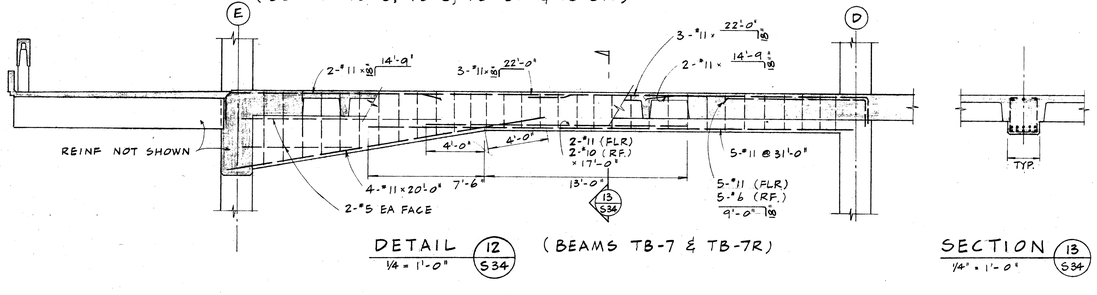
SECTION 4 / S34 — 1/4" = 1'-0"



DETAIL 14 / S34 — 1" = 1'-0"

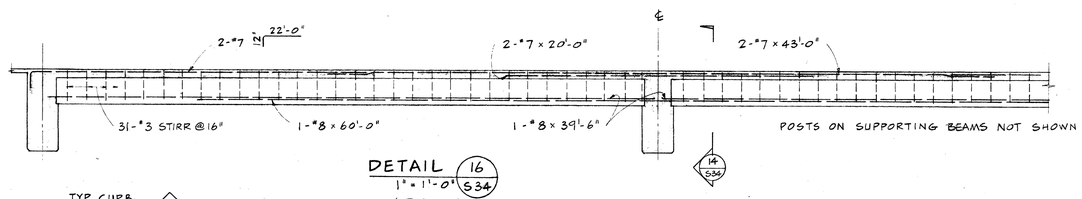


DETAIL 15 / S34 — 1" = 1'-0"

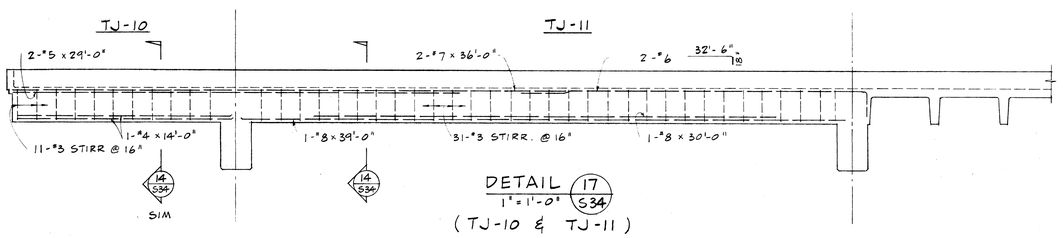


DETAIL 12 / S34 — 1/4" = 1'-0" (BEAMS TB-7 & TB-7R)

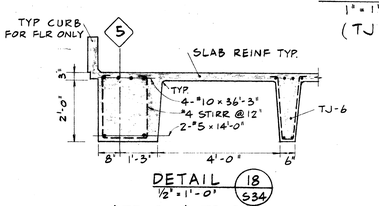
SECTION 13 / S34 — 1/4" = 1'-0"



DETAIL 16 / S34 — 1" = 1'-0" (TJ-1)



DETAIL 17 / S34 — 1" = 1'-0" (TJ-10 & TJ-11)



DETAIL 18 / S34 — ½" = 1'-0" (TB-8 & TB-8R)

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4504 S. W. DOWNETT
PORTLAND, OREGON 97201

DETAILS & SECTIONS

PHASE III-HEALTH SCIENCES BUILDING

JOB NO. 69-18D

DATE JULY 1, 1970

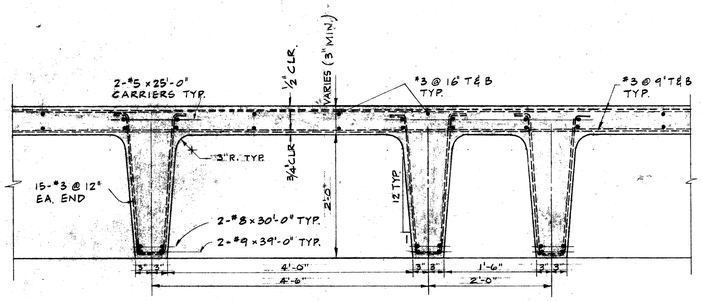
REVISIONS

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5502 N. E. GLISAN STREET PORTLAND, OREGON

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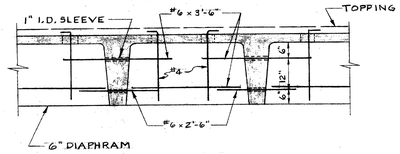
REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 24, 1970

SHEET NO.
S-34

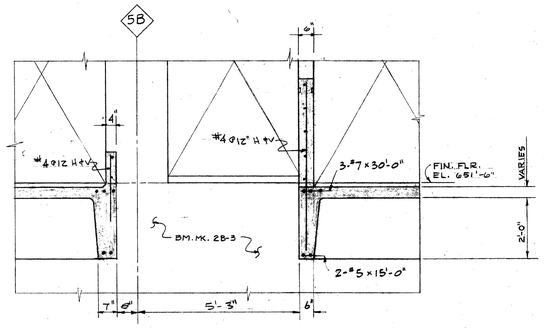


SECTION 1 (S-35)
1" = 1'-0"

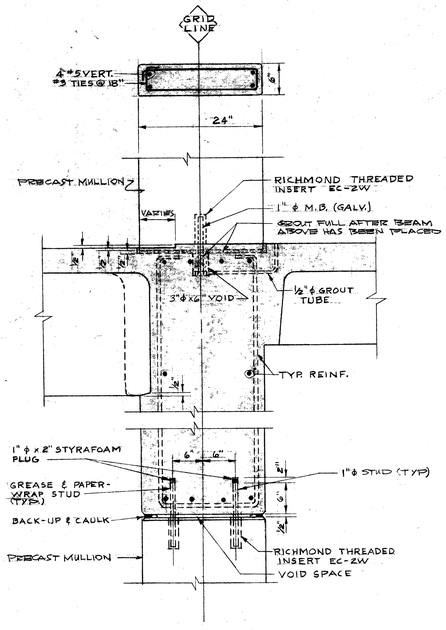
* EDGES OF JOIST SOFFIT SHALL HAVE SAME RADIUS AS PRECAST CHANNELS OF EXISTING BUILDING



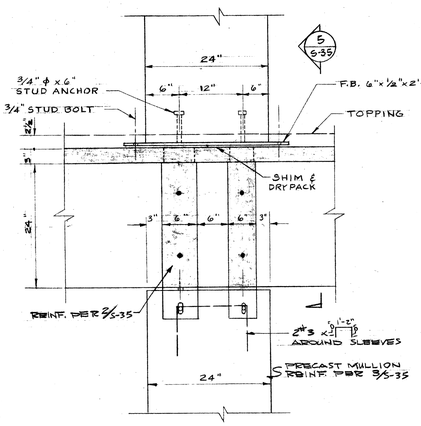
SECTION 2 (S-35)
½" = 1'-0"



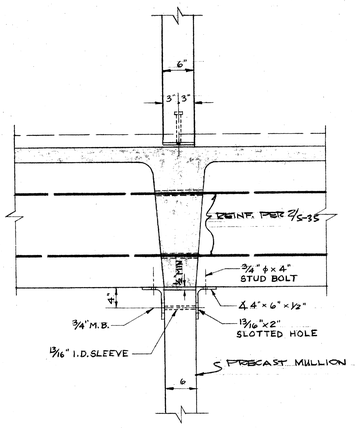
SECTION 7 (S-35)
½" = 1'-0"



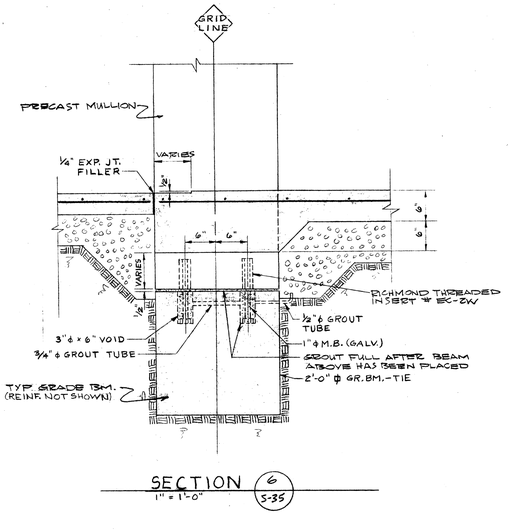
SECTION 3 (S-35)
1" = 1'-0"



SECTION 4 (S-35)
1" = 1'-0"



SECTION 5 (S-35)
1" = 1'-0"



SECTION 6 (S-35)
1" = 1'-0"

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PORTLAND, OREGON 97201

JOB NO. 69-13 D
DATE JULY 1, 1970
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DETAILS & SECTIONS

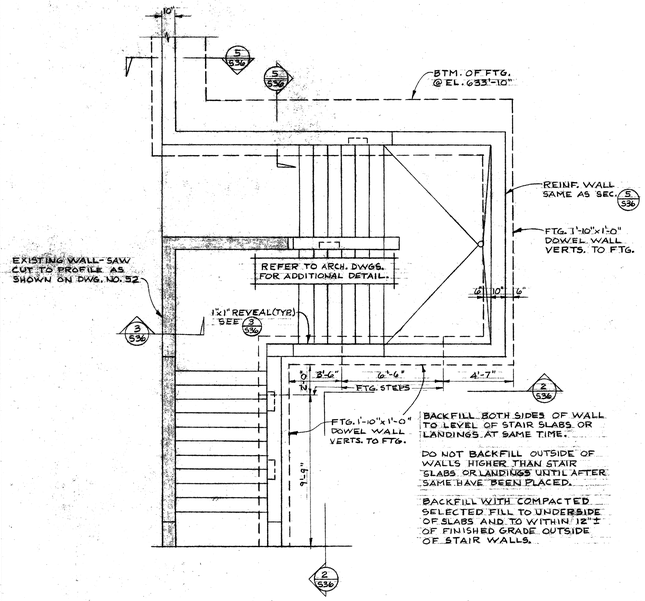
PHASE II-HEALTH SCIENCES BUILDING

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PORTLAND OREGON

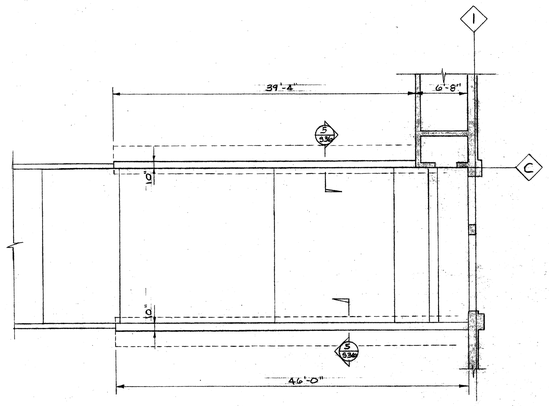
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REGISTERED PROFESSIONAL ENGINEER
OREGON 4326
Samuel M. Holman
RENEWAL 6-30-71

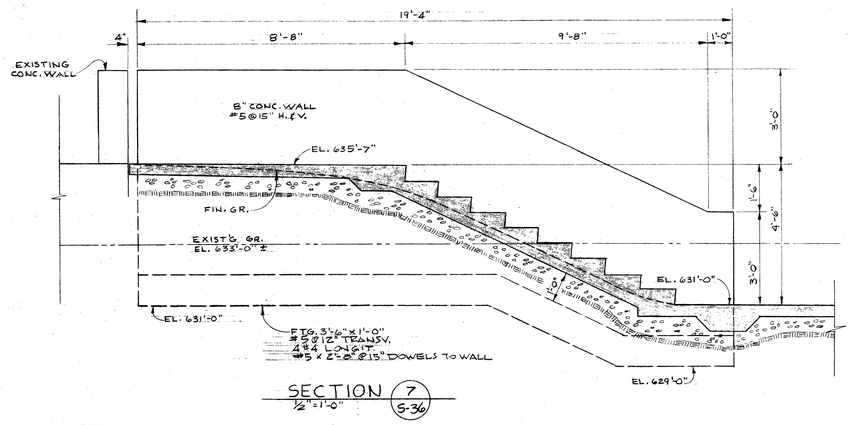
SHEET NO.
S-35



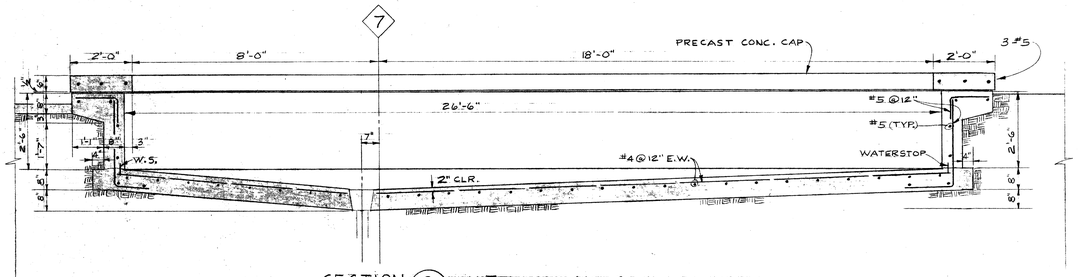
PLAN - STAIR #16 (1/S-36)
1/4" = 1'-0"



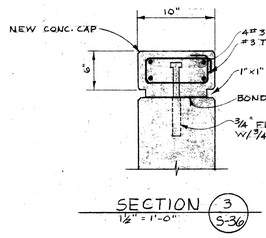
PLAN - SERVICE DRIVE (6/S-36)
1/8" = 1'-0"



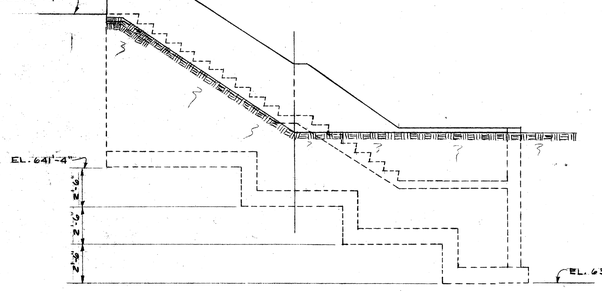
SECTION (7/S-36)
1/2" = 1'-0"



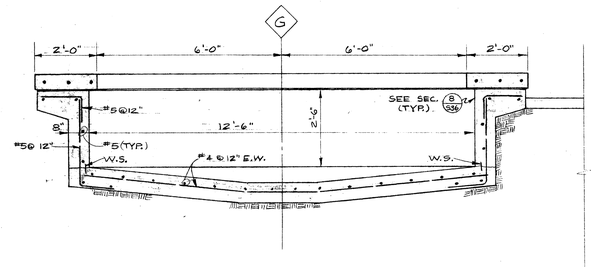
SECTION (8/S-36) ALTERNATE NO. 3
1/2" = 1'-0"



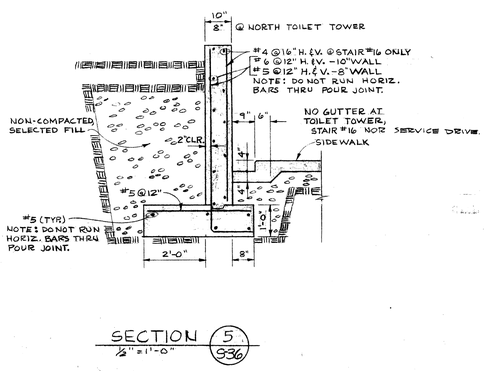
SECTION (3/S-36)
1/2" = 1'-0"



DEVELOPED SECTION (2/S-36)
1/4" = 1'-0"



SECTION (9/S-36) ALTERNATE NO. 3
1/2" = 1'-0"



SECTION (5/S36)
1/2" = 1'-0"

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PORTLAND, OREGON 97221

DATE JULY 1, 1970

JOB NO. 69-13 D

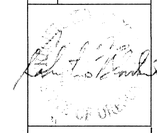
REVISIONS

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5502 N. E. GLISAN STREET PORTLAND, OREGON

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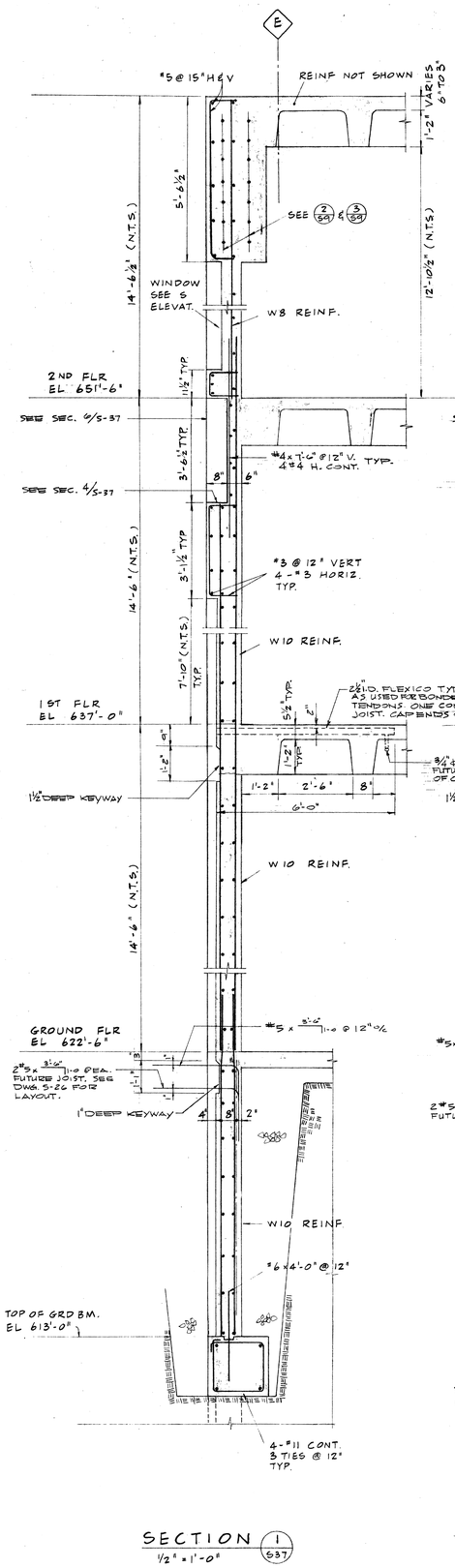
PHASE III-HEALTH SCIENCES BUILDING

YARD STRUCTURES





SHEET NO.
S-36



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STRUCTURAL ENGINEERS
1334 S. W. CORBETT
PORTLAND, OREGON 97201

JOB NO. 69-18D
DATE JULY 1, 1970
REVISIONS

WALL SECTIONS & DETAILS (BASIC BID)

PHASE III - HEALTH SCIENCES BUILDING

PORTLAND COMMUNITY COLLEGE
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PORTLAND OREGON

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PETERSON & SMITH ASSOCIATE ARCHITECTS
5502 N. E. GLISAN STREET PORTLAND, OREGON

SHEET NO.
S-37

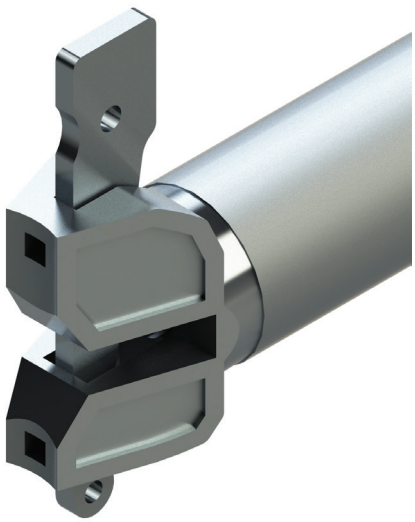
INTRODUCTION

The following values shown in this manual are 'Safe Working Capacities'. These are derived by dividing the Ultimate Strength by a Factor of Safety (F.O.S.) of 4. (Unless otherwise noted).

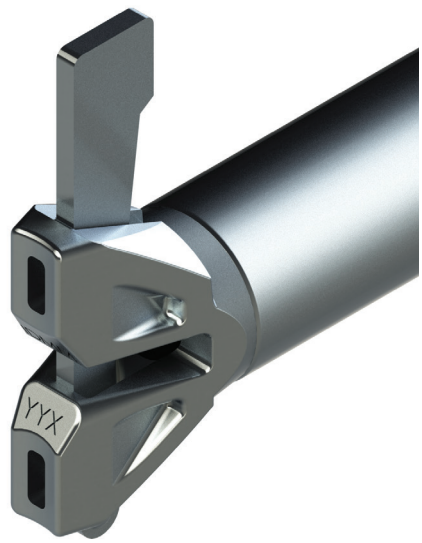
Since early 2015, AT-PAC has been manufacturing its Mk2 Ringlock System. The following data within this manual is based on Mk1 and Mk2 Ringlock Systems. Where appropriate, the lower of the Mk1 and Mk2 values have been used taking into account the possibility that both Ringlock systems may be used together.

The below illustrations show the difference between Mk1 & MK2 Ledger ends for identification purposes.

MK1 LEDGER HEAD:



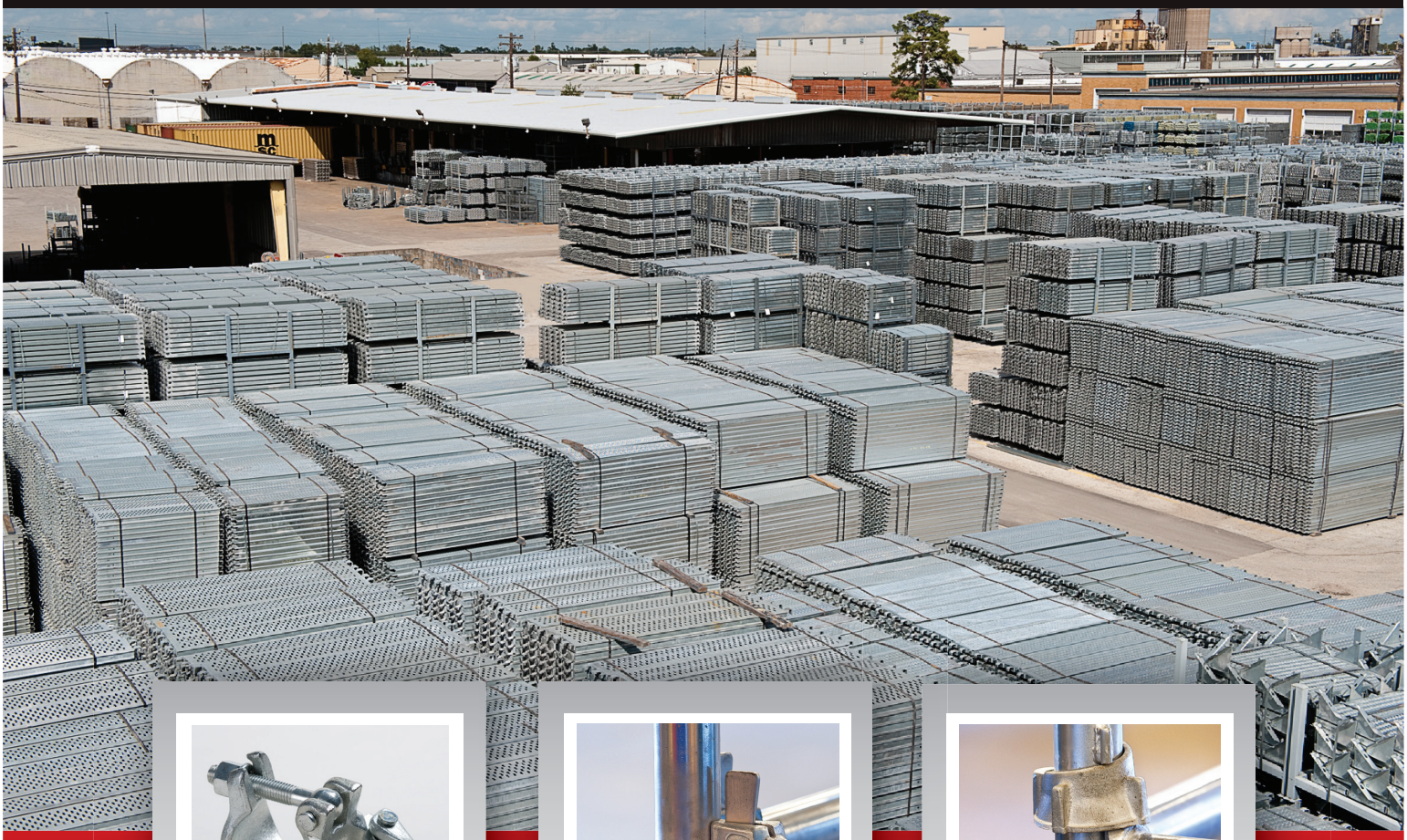
MK2 LEDGER HEAD:



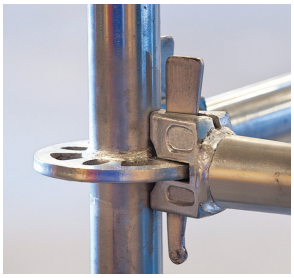
Note: *Illustrations throughout this document reference MK2 components unless otherwise noted.*

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ENGINEERING CATALOG









DSS

DIRECT SCAFFOLD SUPPLY

INTRODUCTION

For decades, **Direct Scaffold Supply** has accommodated the special needs of the construction and petrochemical industries. Our commitment to industry-leading quality assurance, extensive employee training and factory certification are unmatched and our proprietary manufacturing and logistics programs ensure that you receive delivery of the safest most reliable scaffolding products wherever in the world you need them on time, every time. We are here to help you retain your competitive edge.

Quality Steel Means Quality Scaffolding

At **Direct Scaffold Supply** we are committed to quality in every step of the scaffold manufacturing process. All the steel we use comes with mill certifications, but we don't stop there. We use an independent lab to verify that all steel arriving in our factories meets or exceeds the appropriate ASTM/ANSI Specifications.

Our Commitment to Safety

We provide extensive classroom and on the job training for all members of our factory team. Our welding procedures were written by an independent professional engineer, and were qualified by testing at independent labs. We constantly qualify all of our welders to the AWS D1.1 standard.

Reliability

All of the products produced by **Direct Scaffold Supply** carry a warranty, and we also have full product liability insurance issued by US carriers. We know that your safety depends on our scaffolding, so we go above and beyond in our quality assurance programs to ensure that the scaffolding that you receive is the safest and most reliable available anywhere in the world. We are proud to have earned ISO 9001:2000 certification for all of our manufacturing facilities.

Compatibility

We verified, though independent professional engineers, that all of our scaffolding products and accessories are compatible with other major US and European Manufacturers.

Value

Our diversified manufacturing base provides us with sufficient manufacturing capacity to meet your requirements. Plus it creates a distinct competitive advantage. We implement our industry leading quality assurance programs in all of our oversees factories, and combine those resources with the technical knowledge and experience of our US operations. This allows **Direct Scaffold Supply** to offer you a distinct cost advantage and creates significant value for our customers.

Quality by Design

At **Direct Scaffold Supply**, we take a common sense approach to good business. We start with quality people, manufacture quality products and work hard to establish and maintain quality relationships with our customers. We look forward to the privilege of working with you and the opportunity to demonstrate our commitment to quality manufacturing, business excellence and above all CUSTOMER SATISFACTION.

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RING LOCK SECTION

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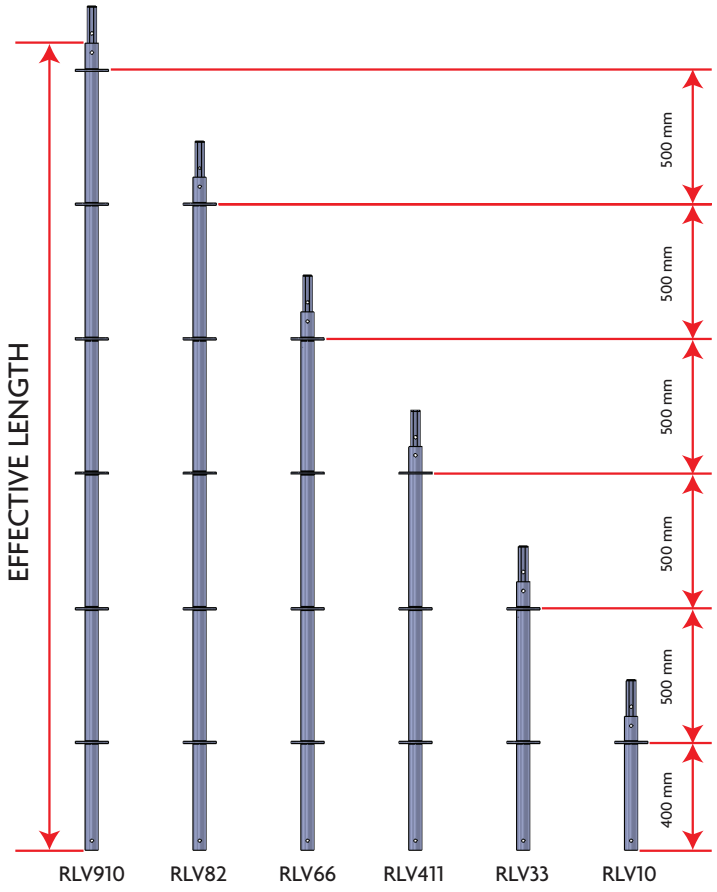
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TUBE SPECIFICATIONS

	Minimum Tensile		Minimum Yield		Minimum Elongation %	
	Mpa	psi	Mpa	psi	mm	in
RLV	485	70,343	345	50,000	50.8	2.0
RLH	485	70,343	345	50,000	50.8	2.0
RLVD	483	70,000	345	50,000	50.8	2.0
CLCB	483	70,000	345	50,000	50.8	2.0

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VERTICALS

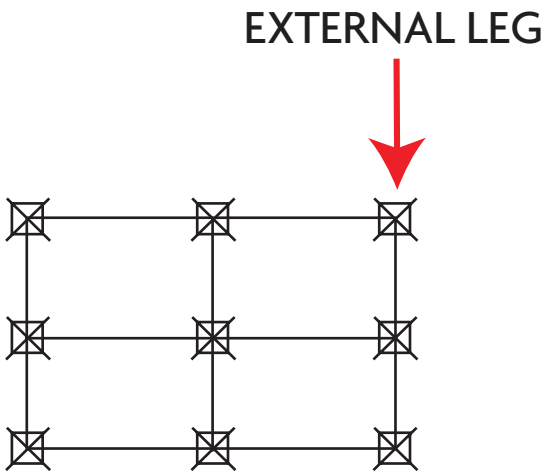


** Maximum allowable compressive load is based on Bay Braces or Tube and Clamp diagonal braces connected at the same level as ledgers to standards. Bay Braces or Tube Clamp diagonal braces must be installed at the same vertical increments as ledgers.

Product Code	Description	Effective Length		Weight	
		Inches	Meters	Lb	Kg
RLV10	1 Ring Vertical W/Spigot	19.69	0.50	6.9	3.1
RLV33	2 Ring Vertical W/Spigot	39.37	1.00	12.1	5.5
RLV411	3 Ring Vertical W/Spigot	59.06	1.50	17.3	3.1
RLV66	4 Ring Vertical W/Spigot	78.74	2.00	6.9	7.8
RLV82	5 Ring Vertical W/Spigot	98.43	2.50	26.4	12.0
RLV910	6 Ring Vertical W/Spigot	118.11	3.00	32.9	15.0

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VERTICALS- EXTERNAL LEG LOADING CHART



Product Code	External Vertical 7'-0" Horizontal
RLV	4700 Lbs.

(Safe Working Loads are based on a 4:1 Safety Factor.)

1. Allowable load on each vertical depends on the distance between horizontals and the number of the horizontal members attached at each cup.

2. Above safe working loads are based on 4:1 Safety Factor.

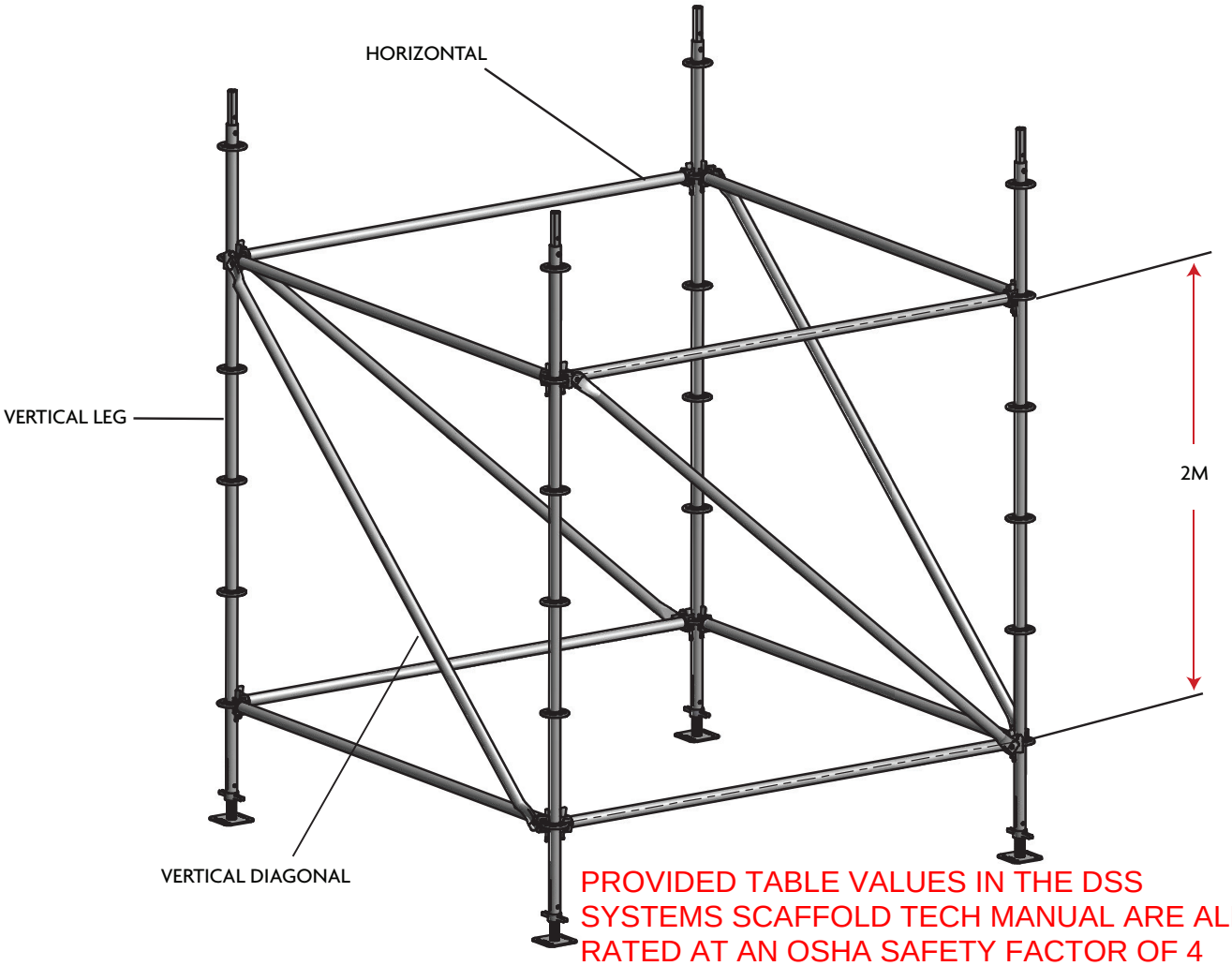
3. Allowable safe working load on each Rosette is 3,300 pounds based on 4:1 Safety Factor.

4. The allowable loads are only valid if each horizontal member is adequately braced to prevent horizontal movement.

* Chart is provided as reference only. Seek professional engineering guidance when designing scaffolds.

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VERTICAL LEG BRACE CONFIGURATION



PROVIDED TABLE VALUES IN THE DSS SYSTEMS SCAFFOLD TECH MANUAL ARE ALL RATED AT AN OSHA SAFETY FACTOR OF 4

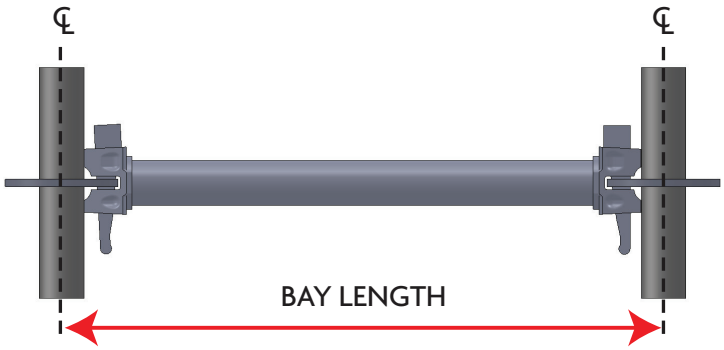
SINCE THE APPLICATION OF THESE COMPONENTS ARE BEING DESIGNED UNDER THE IBC, THE IBC REFERENCES GOVERN THE SAFETY FACTORS TO BE USED, THEREFORE THESE STEEL COMPONENTS SHOULD USE THE AISC SAFETY FACTOR OF 1.67:1. USING *(4/1.67) ADJUSTS THE DESIGN VALUES TO BE AISC COMPLIANT.

PER AISC 360-16, SPECIFICATIONS, THE DESIGN SAFETY FACTORS ARE AS FOLLOWS:

SECTION D1, FOR TENSION, OMEGA = 1.67
SECTION E1, FOR COMPRESSION, OMEGA = 1.67
SECTION F1,FOR FLEXURE, OMEGA = 1.67
SECTION G1,FOR SHEAR, OMEGA = 1.67

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HORIZONTALS



Product Code	Description	Bay Length		Weight		CPL (Lbs.)	UDL (Lbs./ft)
		Inches	Meters	Lb	Kg		
RLH20	2' Horizontal	24.01	0.61	7	3.2	1,500	1,400
RLH22	2'-2" Horizontal	25.59	0.65	7.1	3.2	1,480	1,380
RLH24	2'-4" Horizontal	28.74	0.73	7.5	3.4	1,477	1,320
RLH211	2'-11" Horizontal	34.65	0.88	7.7	3.5	1,250	850
RLH30	3' Horizontal	35.83	0.91	9.4	4.3	1,220	800
RLH33	3'-3" Horizontal	39.98	0.99	9.9	4.5	1,180	700
RLH36	3'-6" Horizontal	42.91	1.09	10.3	4.7	967	565
RLH39	3'-9" Horizontal	45.28	1.15	11.7	5.3	940	505
RLH40	4' Horizontal	48.03	1.22	11.9	5.4	900	480
RLH43	4'-3" Horizontal	50.79	1.29	12.1	5.5	840	425

(Safe Working Loads are based on a 4:1 Safety Factor.)

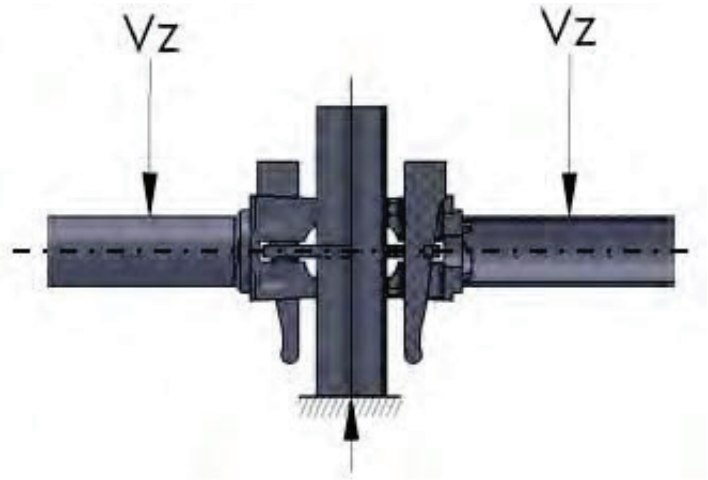
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HORIZONTALS

Product Code	Description	Bay Length		Weight		CPL (Lbs.)	UDL (Lbs./ft)
		Inches	Meters	Lb	Kg		
RLH410	4'-10" Horizontal	58.27	1.48	13.7	6.5	744	336
RLH50	5' Horizontal	59.84	1.52	14	6.3	700	320
RLH52	5'-2" Horizontal	61.81	1.57	14.7	6.7	660	265
RLH60	6' Horizontal	72.05	1.83	16.2	7.3	600	225
RLH69	6'-9" Horizontal	81.50	2.07	18.6	8.4	497	150
RLH70	7' Horizontal	83.86	2.13	18.7	8.5	475	130
RLH80	8' Horizontal	96.06	2.44	21.6	9.8	425	120
RLH86	8'-6" Horizontal	101.87	2.57	23.2	10.5	398	97
RLH90	9' Horizontal	107.39	2.74	25.6	11.6	362	90
RLH100	10' Horizontal	120.08	3.05	26.7	12.1	333	67
RLH101	10'-1" Horizontal	120.87	3.07	28	12.7	250	50

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MAXIMUM VERTICAL LOAD

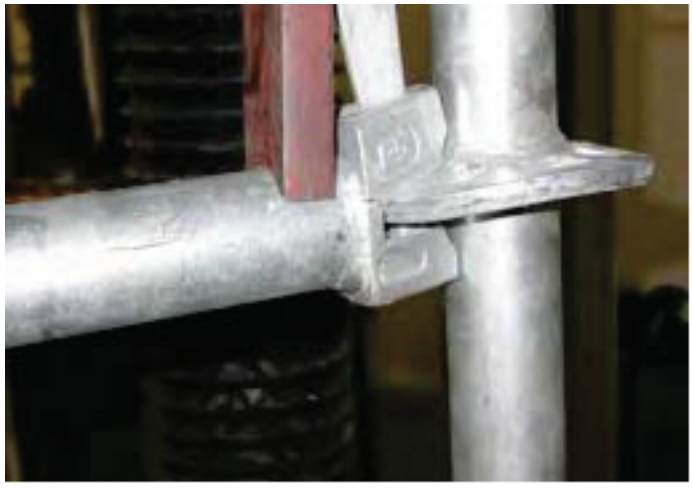


The vertical load Vz is the supporting load for the transoms.

The maximum load for a single Ledger or transom was given to be
Max. Vz = 21 kN = 4,720#

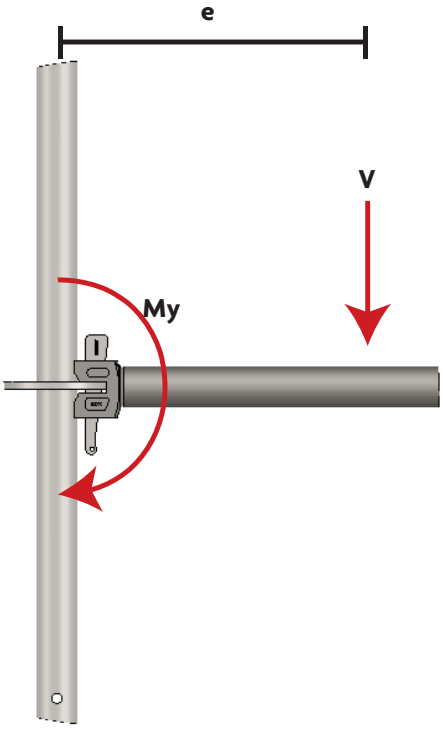
The maximum allowable load on the complete rosette was given as:
Vz = 64,00 kN

See OSHA Test Standards



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MAXIMUM BENDING MOMENT



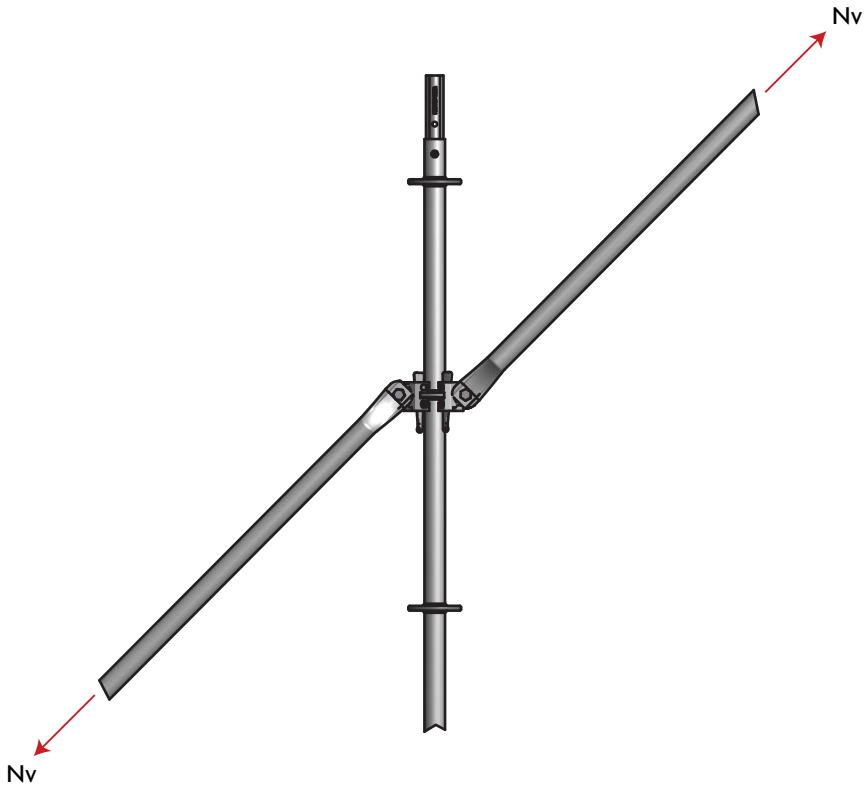
Max. My = 73 kNcm

See OSHA Testing Standards



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HORIZONTAL DIAGONALS

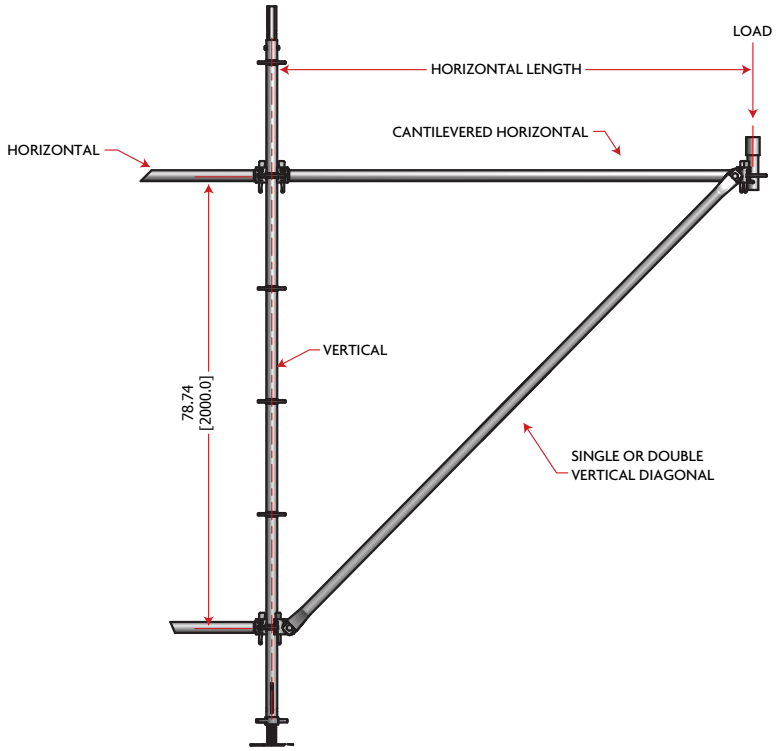


The maximum tensile load in the diagonals Nv was found to be:

Max. Nv = 3,190 lbf [14.2kN]

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RIGGER ASSEMBLY



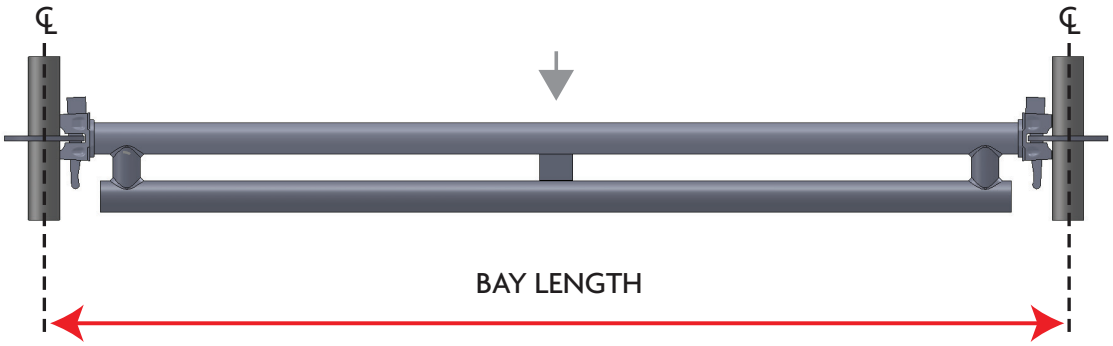
Product Code	Cantilevered Horizontal Length		Load Rating			
			Single Vertical Diagonal		Double Vertical Diagonal	
	Inches	Meters	Lb-f	kN	Lb-f	kN
RLH39	45.28	1.15	540	2.4	1,080	4.8
RLH52	61.89	1.57	490	2.2	800	3.6
RLH70	83.86	2.13	420	1.9	580	2.6

Note:
-To provide bracing to the vertical, horizontals must be installed at the same rosettes as vertical diagonal(s) and cantilevered horizontal.
-To prevent scaffold from overturning scaffold must be properly tied and/or be of sufficient size.
-Allowable loads are the same when vertical diagonals are installed to carry tension loads or compression loads.

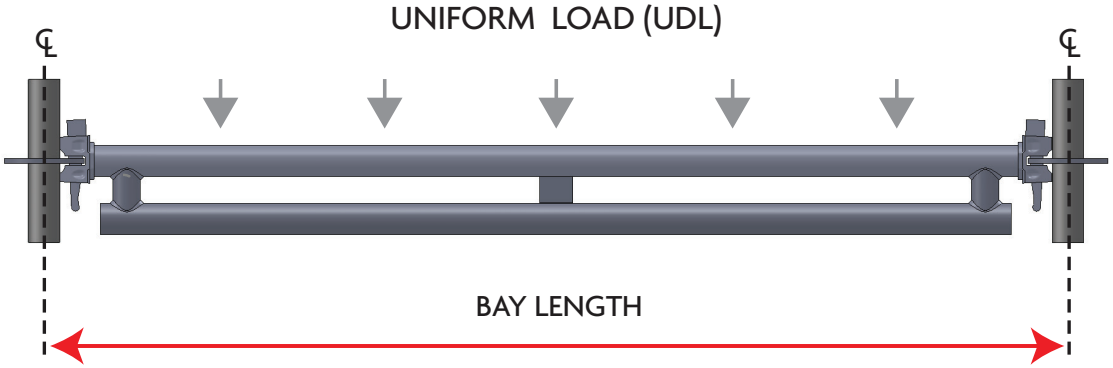
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DOUBLE LEDGERS

CENTER LOAD (CPL)



UNIFORM LOAD (UDL)



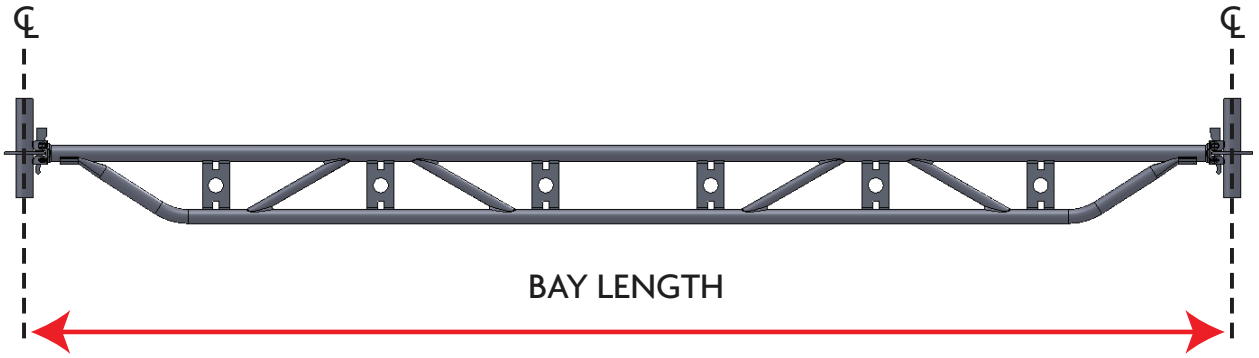
Product Code	Description	Bay Length		Weight		CPL (Lbs.)	UDL (Lbs./ft)
		Inches	Meters	Lb	Kg		
RLDL52	5'-2" Double Ledger	61.81	1.57	27.3	12.4	2,100	925
RLDL60	6' Double Ledger	72.00	1.83	31.1	14.1	2,075	875
RLDL69	6'-9" Double Ledger	81.50	2.07	34.4	15.6	2,000	820
RLDL70	7' Double Ledger	83.86	2.13	34.4	15.6	2,000	715
RLDL80	8' Double Ledger	96.06	2.44	40.7	18.5	1,875	615
RLDL86	8'-6" Double Ledger	101.18	2.57	41.0	18.6	1,750	540
RLDL90	9' Double Ledger	107.87	2.74	45.5	20.7	1,625	487
RLDL100	10' Double Ledger	120.08	3.05	51.7	23.5	1,455	365

715 PLF*(4/1.67) = 1,713 PLF for OHP / 150 psf = 11.4' bays max

(Safe Working Loads are based on a 4:1 Safety Factor.)

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TRUSS LEDGER

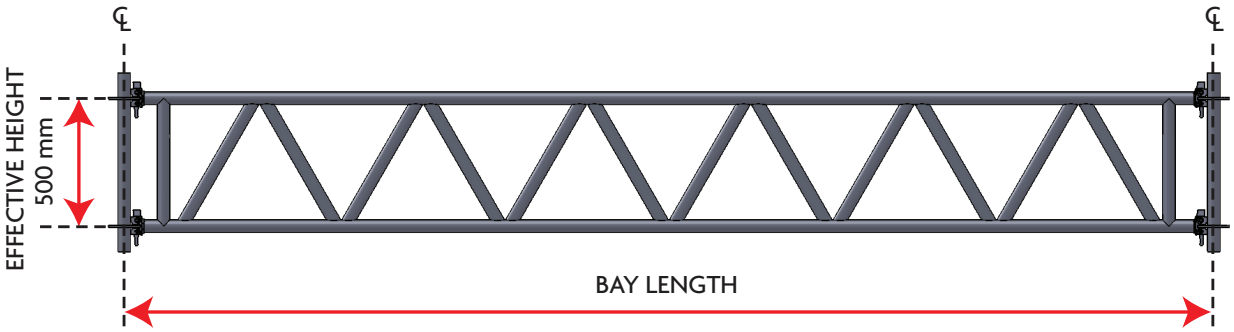


Product Code	Description	Bay Length		Weight		CPL (Lbs.)	UDL (Lbs./ft)
		Inches	Meters	Lb	Kg		
RLT52	5'-2" Truss Ledger	61.81	1.57	27.3	12.4	2,200	770
RLT69	6'-9" Truss Ledger	81.50	2.07	37.9	17.2	1,740	540
RLT70	7' Truss Ledger	83.86	2.13	35.5	16.1	1,690	530
RLT80	8' Truss Ledger	96.06	2.44	38.1	17.3	1,505	355
RLT86	8'-6" Truss Ledger	101.18	2.57	42.1	19.1	1,430	380
RLT100	10' Truss Ledger	120.08	3.05	46.7	21.2	1,135	245
RLT101	10'-1" Truss Ledger	120.87	3.07	55.1	25.0	1,130	225
RLT120	12' Truss Ledger	144.09	3.66	56.8	25.8	950	200

(Safe Working Loads are based on a 4:1 Safety Factor.)

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LATTICE GIRDER



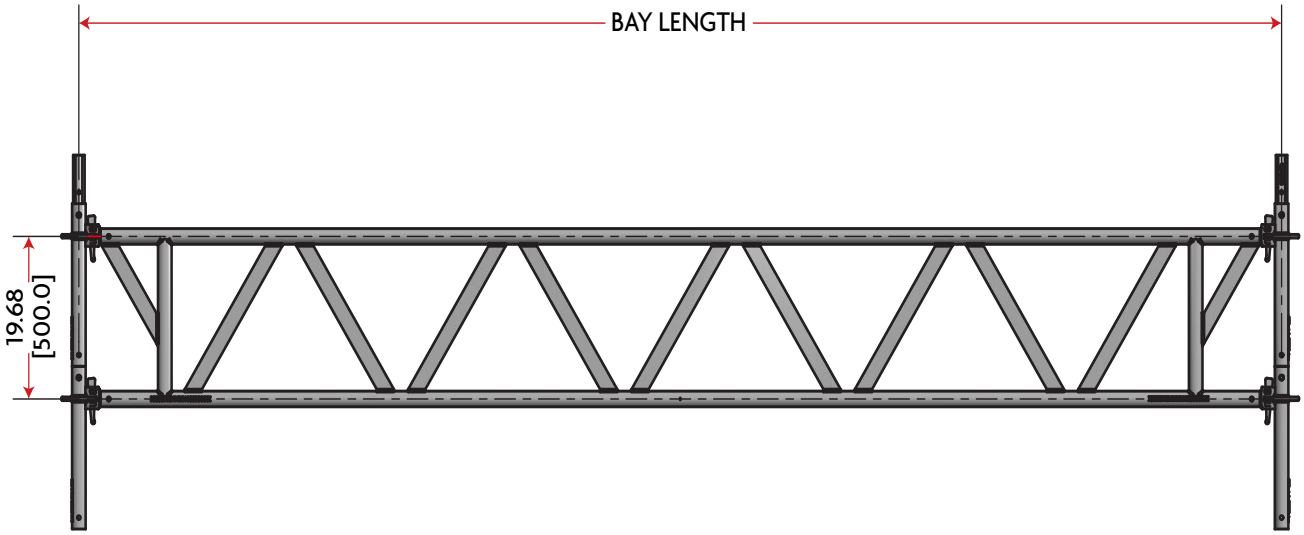
Product Code	Description	Bay Length		Weight		CPL (Lbs.)	UDL (Lbs./ft)
		Inches	Meters	Lb	Kg		
RLLG07	7' Lattice Girder	83.86	2.13	50	22.7	2000	425
RLLG086	8'-6" Lattice Girder	101.18	2.57	63	28.4	2000	420
RLLG10	10' Lattice Girder	120.08	3.05	75	34.0	2,000	400
RLLG14	14' Lattice Girder	168.11	4.27	98	44.5	2,000	360
RLLG16	16' Lattice Girder	192.13	4.88	109	49.4	2,000	330
RLLG18	18' Lattice Girder	216.14	5.49	123	55.8	2,000	280
RLLG20	20' Lattice Girder	240.16	6.10	143	64.9	2,000	250
RLLG21	21' Lattice Girder	251.97	6.40	147	66.7	*1,500	240
RLLG253	25'-3" Lattice Girder	303.15	7.70	180	81.6	*1,250	220
RLLG28	28' Lattice Girder	335.83	8.53	200	90.7	**1,000	180

*The CPL for RLLG21 and RLLG253 has two point loads at 1/3 of the overall length
** The CPL for the RLLG28 has 3 point loads at ¼ of the overall length

(Safe Working Loads are based on a 4:1 Safety Factor.)

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ALUMINUM LATTICE GIRDER

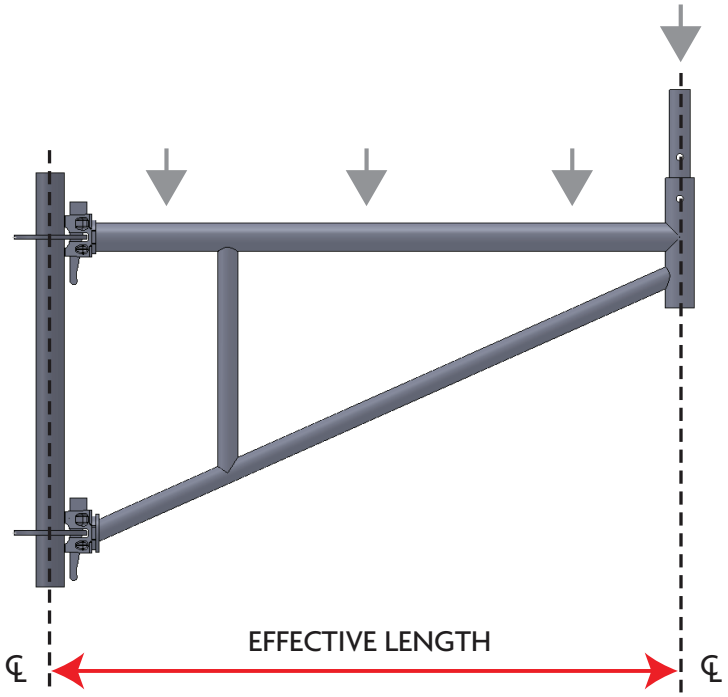


Product Code	Description	Bay Length		Weight		CPL (Lbs.)	UDL (Lbs./ft)
		Inches	Meters	Lb	Kg		
RLALG14	14' Aluminum Lattice Girder	168	4.27	36	16.3	1,650	165
RLALG21	21' Aluminum Lattice Girder	252	6.4	51.8	23.5	*840	105
RLALG28	28' Aluminum Lattice Girder	336	8.53	70	31.8	**505	67

* The CPL for RLALG21 has two point loads at 1/3 of the overall length
**The CPL for RLALG28 has 3 point loads at 1/4 of the overall length
The CPL load ratings are per point
(Safe Working Loads are based on a 4:1 Safety Factor.)

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BOARD BRACKET

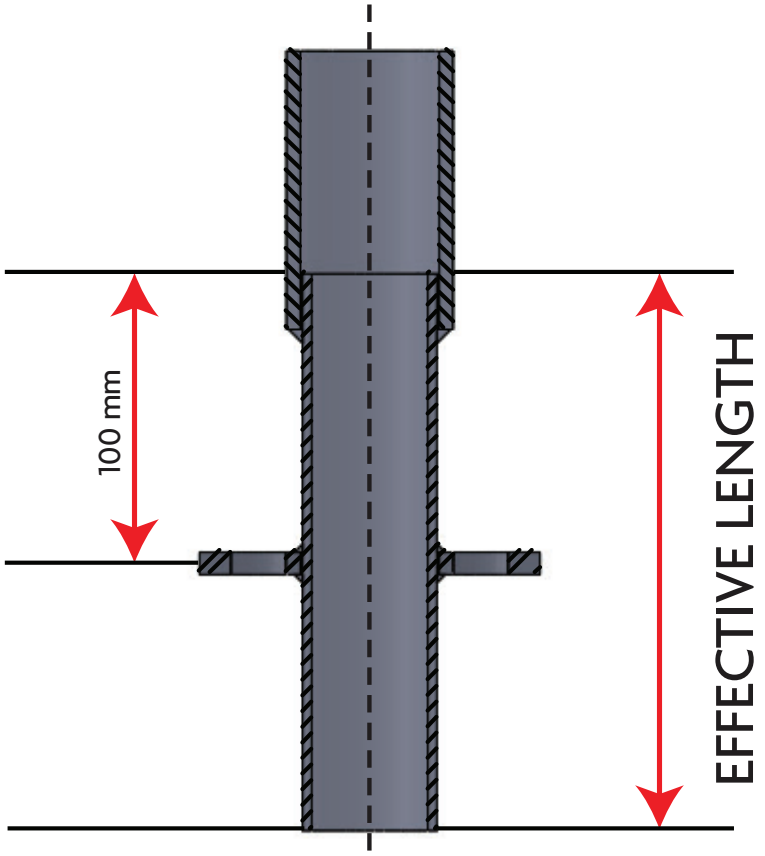


Product Code	Description	Effective Length		Weight	UDL (Lbs./ft)
		Inches	Meters	Lb	
RLBB20	24" Board Bracket	24.02	0.61	12.9	1,100
RLBB25	29" Board Bracket	29.04	0.74	14.7	1,100
RLBB211	34" Board Bracket	34.64	0.88	16.6	1,100
RLBB30	36" Board Bracket	36.18	0.92	19.7	1,100
RLBB33	39" Board Bracket	39.17	1.00	21.5	1,100
RLBB36S	42" Board Bracket	41.93	1.07	20.8	1,100

(Safe Working Loads are based on a 4:1 Safety Factor.)

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STARTER COLLAR

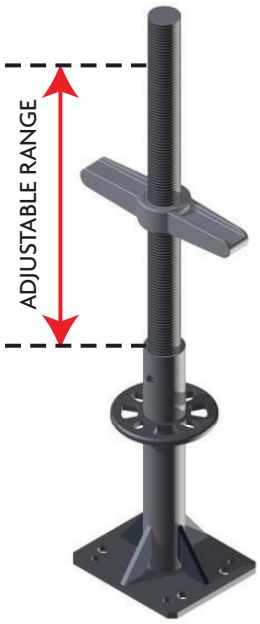


Product Code	Description	Effective Length		Weight		Load Rating (Lb·f)
		Inches	Meters	Lb	Kg	
RLBC-L	Starter Collar Long	7.87	0.20	4.5	2.1	13,680

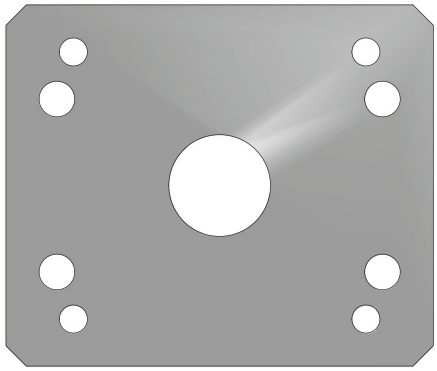
(Safe Working Loads are based on a 4:1 Safety Factor.)

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RING LOCK ADJUSTABLE CASTER ADAPTER



RLCAJ



Product Code	Description	Max Adj. Range	Min. Adj. Range	Weight (Lbs)	Load Rating (Lb·f)
RLCA	Ring Lock Adjustable Caster Adapter	24.37	12.13	15.3	11,450

(Safe Working Loads are based on a 4:1 Safety Factor.)

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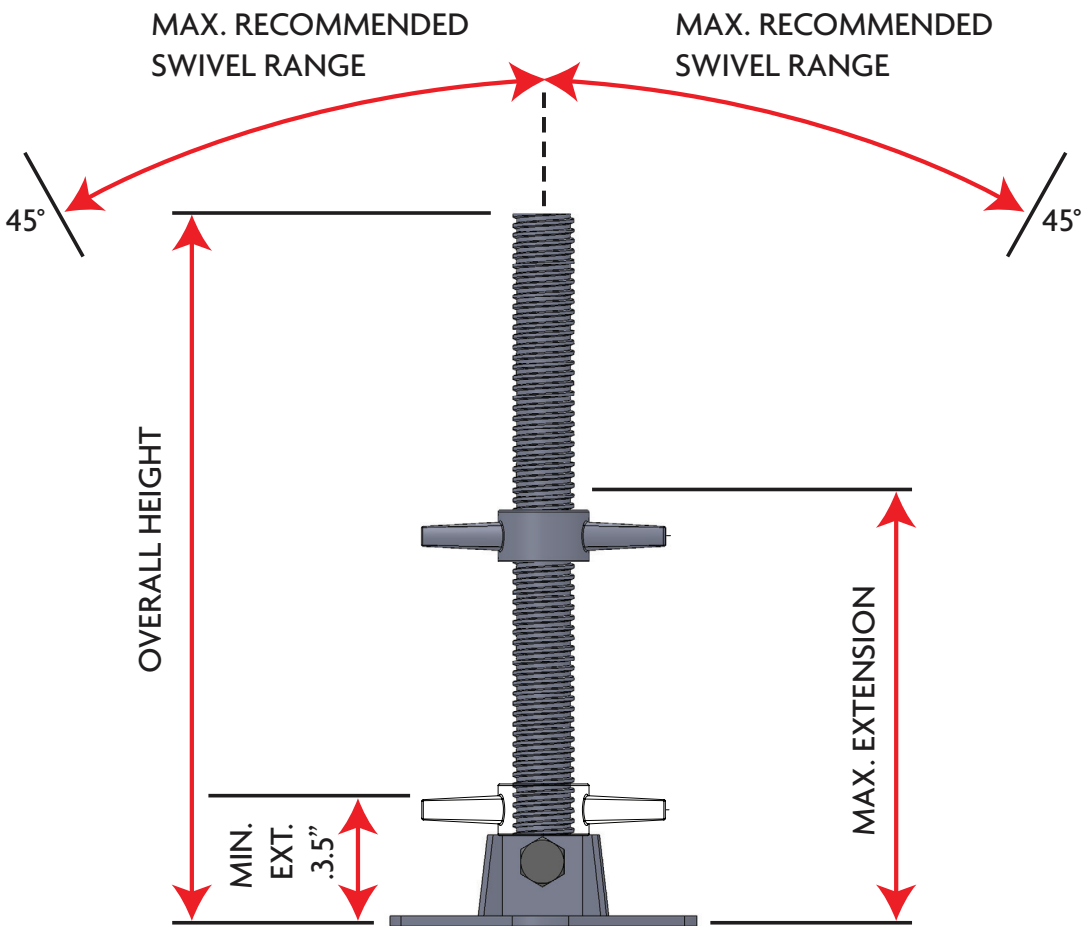
ACCESSORIES SECTION

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SWIVEL SYSTEM JACK



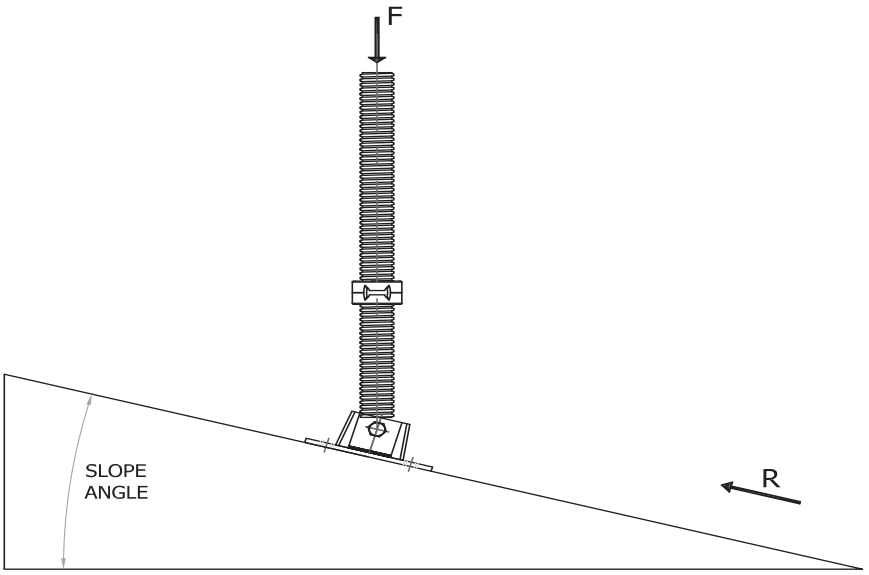
Disclaimer: Swivel jacks should be anchored to the structural surface or restrained. Anchors, bolts or restraints must hold 4 times the shear force that will be applied on the slope. If the angle will exceed 45° consult a Professional Engineer before erecting your structure. DSS/GSD recommends that you always consult a Professional Engineer before erecting a scaffold structure.

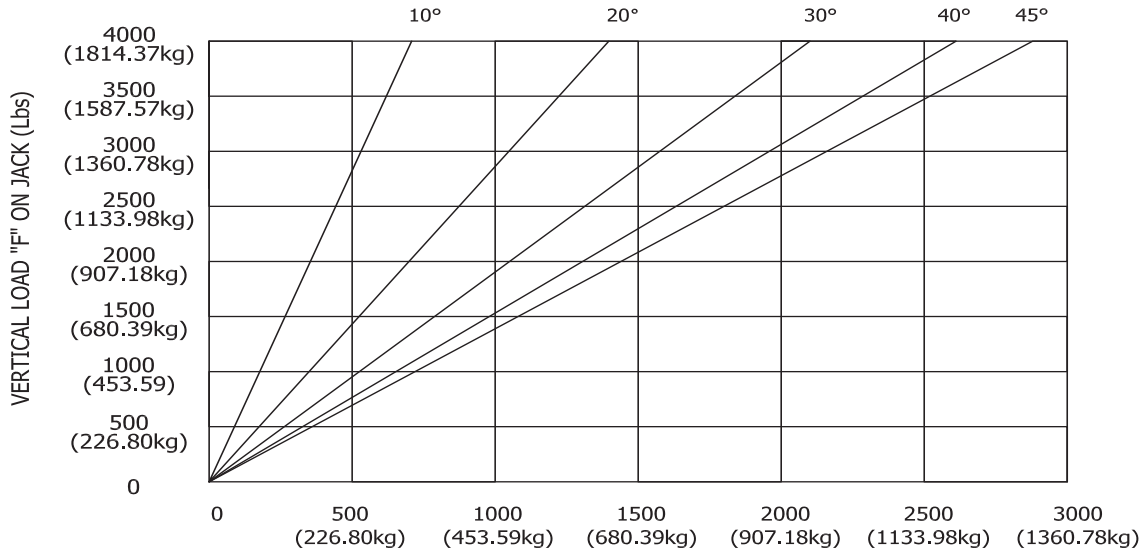
Product Code	Description	Max. Ext.		Overall Hgt.		Weight		Load Rating at Max. Ext.	
		In.	M	In.	M	Lb	Kg	Lb•f	kN
BPSJS	Swivel System Jack 21"	11.57	0.29	20.98	0.53	9.0	4.1	11,240	50
BPSJS69	Swivel System Jack 27"	14.50	0.37	27.34	0.69	10.6	4.8	10,115	45
BPSJC	Swivel Frame (B&C) Jack	17.00	0.43	24.81	0.63	11.5	5.2	14,615	65

(Safe Working Loads are based on a 4:1 Safety Factor.)

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SWIVEL SYSTEM JACK

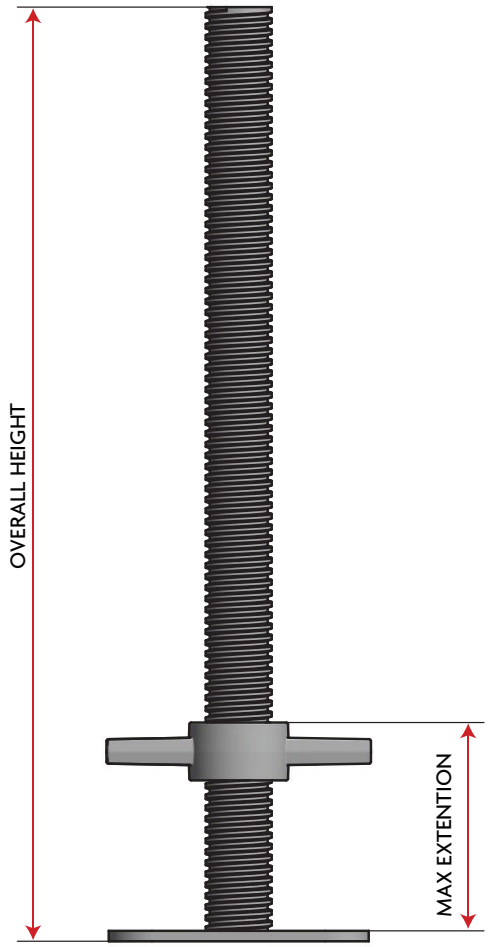




NOTE: The swivel jack base plate must be anchored or resisted by 4x the amount found in the chart. EXAMPLE: If the vertical load of 1500 lb (680.39kg) is imposed on a 40° slope, a resistive force of 1000lb (435.59kg) is required as shown in the chart. Therefore, 4 x 1000 = 4000lb (1814.37kg) must be resisted by anchors (or equivalent) to comply with a 4:1 safety factor.

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SYSTEM JACK WITH BASE PLATE



Note: The maximum horizontal load should not exceed 5% of the vertical load.

Product Code	Description	Min. Ex.		Max. Ext.		Overall Hgt.		Weight		Load Rating at Max. Ext.
		In.	M	In.	M	In.	M	Lb	Kg	
BPSJB	21 In System Jack	2	.08	15	0.38	21.22	0.54	8.2	3.7	11,000
BPSJB61	24 In System Jack	2	.08	18	0.46	24.31	0.62	9.0	4.1	11,000

(Safe Working Loads are based on a 4:1 Safety Factor.)

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8” CASTER



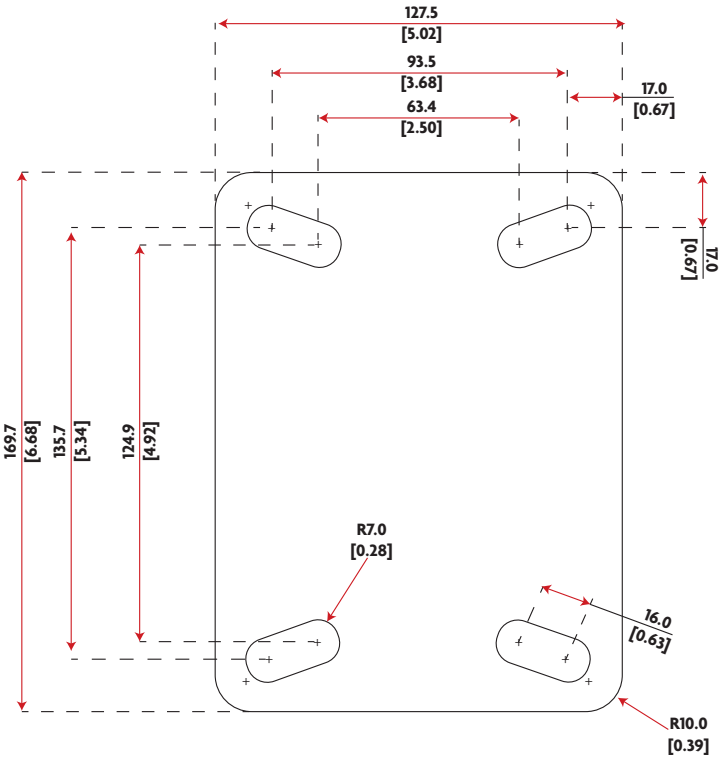
Product Code	Description	Rated Load (lb·f)
CAS8SA	8” Caster w/ Screw Jack	1,500

(Safe Working Loads are based on a 4:1 Safety Factor.)

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CASTERS





Product Code	Description	Rated Load (lb·f)
CAS12P	12" Scaffold Plate Caster	3,000

(Safe Working Loads are based on a 4:1 Safety Factor.)

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CLAMPS SECTION

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I-BOLT CLAMPS



CMP1/2



CMPRA



CMPSW

Product Code	Description	Weight		Load Rating		
		Lb	Kg	Tube Slip (lb·f)	Failure Load (lb·f)	Center Rivet Load (lb·f)
CMP1/2	1/2 Clamp (I-Bolt)	2.00	0.90	1,200	N/A	N/A
CMPRA	Right Angle Clamp (I-Bolt)	3.30	1.50	1,200	3,550	N/A
CMPSW	Swivel Clamp (I-Bolt)	4.00	1.80	N/A	3,000	3,000

(Safe Working Loads are based on a 4:1 Safety Factor.)

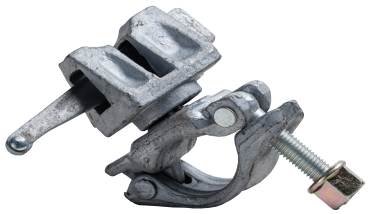
Direct Scaffold Supply recommends that all clamps be torque between 45 and 60 ft. lbs.

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RING SYSTEM ACCESSORY CLAMPS



CMP-RMPEBR



CMP-RMPEBS



CMP-RMPWCR



CMP-RMPWCS



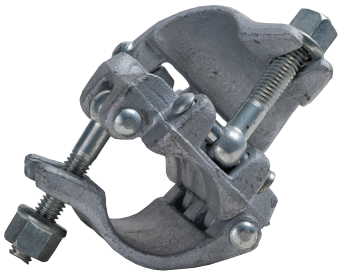
CMP-RTWC

Product Code	Description	Weight		Load Rating	
		Lb	Kg	Pull Apart (lb·f)	Loading Slip (lb·f)
CMP-RMPEBR	Ring Mouth Piece w/Rigid Eye-Bolt Clamp	1.8	0.8	3,700	1,500
CMP-RMPEBS	Ring Mouth Piece w/Swivel Eye-Bolt Clamp	2.9	1.3	3,350	1,480
CMP-RMPWCR	Ring Mouth Piece w/Rigid Wedge Clamp	3.4	1.6	3,500	3,150
CMP-RMPWCS	Ring Mouth Piece w/Swivel Wedge Clamp	3.4	1.6	2,990	1,570
CMP-RTWC	Twin Wedge Coupler Ring Lock	2.5	1.1	3,900	1,700

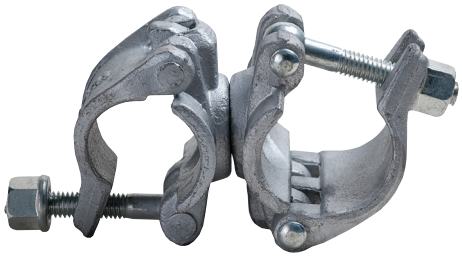
(Safe Working Loads are based on a 4:1 Safety Factor.)

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WIDE BODY CLAMPS



CMP4RA



CMP4SW

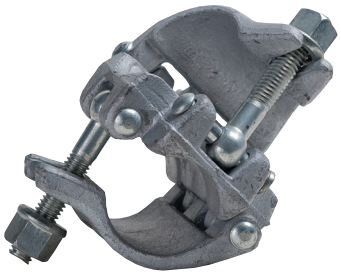
Product Code		CMP4RA	CMP4SW
Description		4 " Body Right Angle Clamp (I-Bolt)	4 " Body Swivel Clamp (I-Bolt)
Weight	LB	4.2	4.9
	KG	1.9	2.2
Load Rating	Pull Apart(lb·f)	5,900	4,550
	Failure Load (lb·f)	9,550	3,200

(Safe Working Loads are based on a 4:1 Safety Factor.)

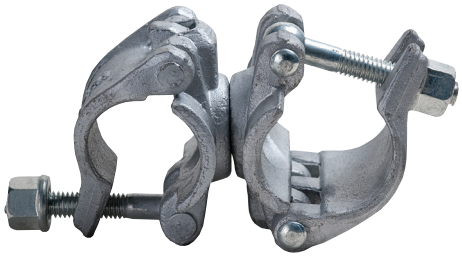
Direct Scaffold Supply recommends that all clamps be torque between 45 and 60 ft. lbs.

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WIDE BODY CLAMPS - ITALY



CMPNIRA



CMPNISW

Product Code		CMPNIRA	CMPNISW
Description		4 " Body Right Angle Clamp (I-Bolt) - Italy	4 " Body Swivel Clamp (I-Bolt) - Italy
Weight	LB	4.2	4.9
	KG	1.9	2.2
Load Rating	Pull Apart(lb·f)	5,900	4,550
	Failure Load (lb·f)	9,550	3,200

(Safe Working Loads are based on a 4:1 Safety Factor.)

Direct Scaffold Supply recommends that all clamps be torque between 45 and 60 ft. lbs.

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I-BEAM TUBE CLAMPS



CMPIBTCF



CMPIBSF

Product Code		CMPIBSF	CMPIBTCF
Description		Swivel I-Beam Clamp Forged	I-Beam Tube Clamp Forged
Weight	LB	4.0	3.5
	KG	1.8	1.6
Load Rating	Clamp Slip	2,200	1,150
	Tube Slip	2,100	1,500
	Tensile Capacity	5,450	4,350

(Safe Working Loads are based on a 4:1 Safety Factor.)

Data in table is based upon clamps used in pairs
Rated loads for the Beam Slip and Tube Slip are based on the eyebolt tightened to 45 ft/lbs

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WEDGE CLAMPS



CMPWR



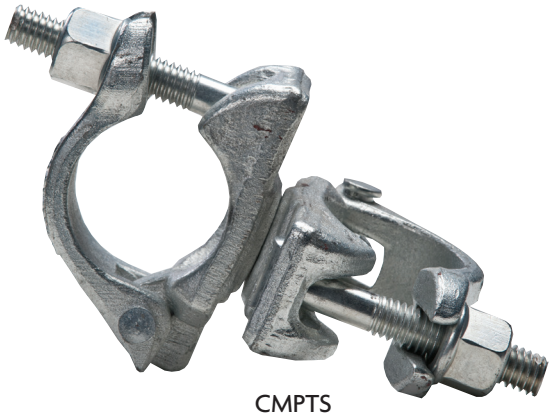
CMPWS

Product Code		CMPWR	CMPWS
Description		Wedge Clamp Right Angle	Wedge Clamp Swivel
Weight	LB	3.2	3.6
	KG	1.5	1.6
Load Rating	EN-74-1:2005 Standard	CLASS B	CLASS B
	Pull Apart (lb·f)	3,750	N/A
	Clamp Slip (lb·f)	1,600	500

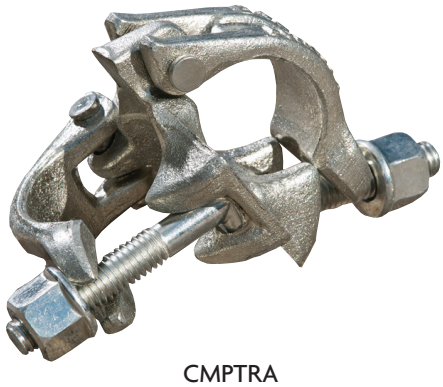
(Safe Working Loads are based on a 4:1 Safety Factor.)

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T-BOLT CLAMPS



CMPTS



CMPTRA

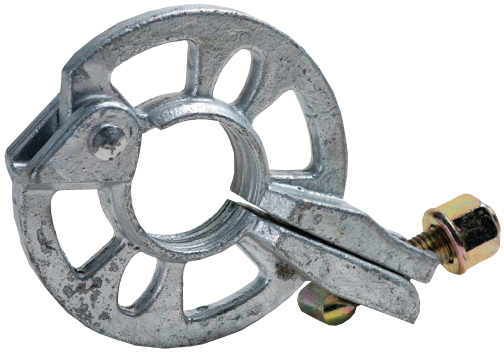
Product Code		CMPTS	CMPTRA
Description		T Bolt Swivel Clamp	T Bolt Right Angel Clamp
Weight	LB	2.8	2.3
	KG	1.3	1.1
Load Rating	Slip (lb·f)	1,800	2,000
	Center Rivet (lb·f)	2,500	N/A
	Failure (lb·f)	N/A	3,600

(Safe Working Loads are based on a 4:1 Safety Factor.)

Direct Scaffold Supply recommends that all clamps be torque between 45 and 60 ft. lbs.

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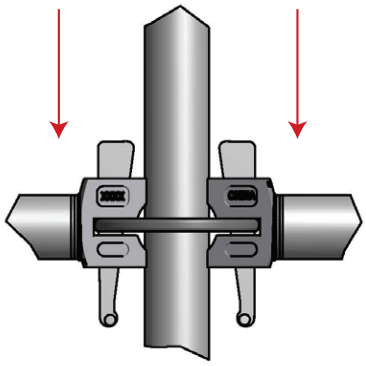
RING LOCK ACCESSORY CLAMPS



CMP-RCLB



CMP-RCLW



SLIP TEST AND ULTIMATE TEST SETUP

Product Code	Description	Weight	Slip Rating (lb·f)	Ultimate Load (lb·f)	Pull Apart (lb·f)
CMP-RCLB	Clamp on Rosette Bolt Style3	2.4	1,360	2,100	2,650
CMP-RCLW	Clamp on Rosette Wedge Style	1.6	415	1,300	1,400

(Safe Working Loads are based on a 4:1 Safety Factor.)

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WALK BOARD SECTION

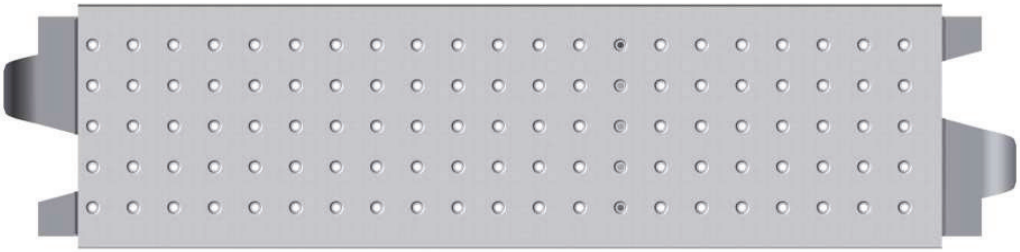
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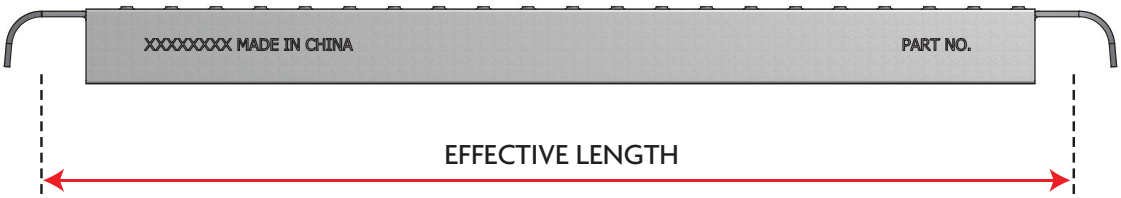
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9" LOW PROFILE STEEL PLANK

TOP VIEW



FRONT VIEW



Product Code	Description	Effective Length		Weight		Rated Load lb/ft^2
		Inches	Meters	Lb	Kg	
WBDEP27	2'-7" Low Profile Steel w/Hook	31	0.79	16.6	7.5	75
WBDEP3	3' Low Profile Steel w/Hook	36	0.91	18.6	8.5	75
WBDEP36S	3'-6" Low Profile Steel w/Hook	42	1.07	20	9.1	75
WBDEP36RL	3'-6.8" Low Profile Steel w/Hook	42.8	1.09	20.1	9.1	75
WBDEP39	3'-9" Low Profile Steel w/Hook	45.3	1.15	21.3	9.7	75
WBDEP4	4' Low Profile Steel w/Hook	48	1.22	22.1	10	75
WBDEP43	4'-3" Low Profile Steel w/Hook	51	1.29	23.1	10.5	75
WBDEP410	4'-10" Low Profile Steel w/Hook	58	1.48	25.3	11.5	75
WBDEP5	5' Low Profile Steel w/Hook	60	1.52	26.4	112	75
WBDEP52	5'-2" Low Profile Steel w/Hook	62	1.57	26.5	12	75

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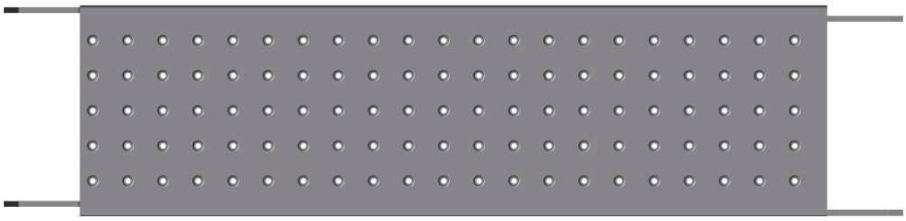
9" LOW PROFILE STEEL PLANK

Product Code	Description	Effective Length		Weight		Rated Load lb/ft^2
		Inches	Meters	Lb	Kg	
WBDEP511	5'-11" Low Profile Steel w/Hook	71	1.8	27.1	12.3	75
WBDEP6	6' Low Profile Steel w/Hook	72	1.83	29.6	13.4	75
WBDEP69	6'-9" Low Profile Steel w/Hook	82	2.07	33.7	15.3	75
WBDEP7	7' Low Profile Steel w/Hook	84	2.13	34.4	15.6	75
WBDEP8	8' Low Profile Steel w/Hook	96	2.44	38.6	17.5	75
WBDEP82	8'-2" Low Profile Steel w/Hook	98	2.5	38.4	17.4	75
WBDEP86	8'-6" Low Profile Steel w/Hook	101	2.57	40.9	18.6	75
WBDEP9	9' Low Profile Steel w/Hook	180	2.74	43.2	19.6	75
WBDEP100	10' Low Profile Steel w/Hook	120	3.05	46.4	21	75

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9'' STEEL PLANK

TOP VIEW



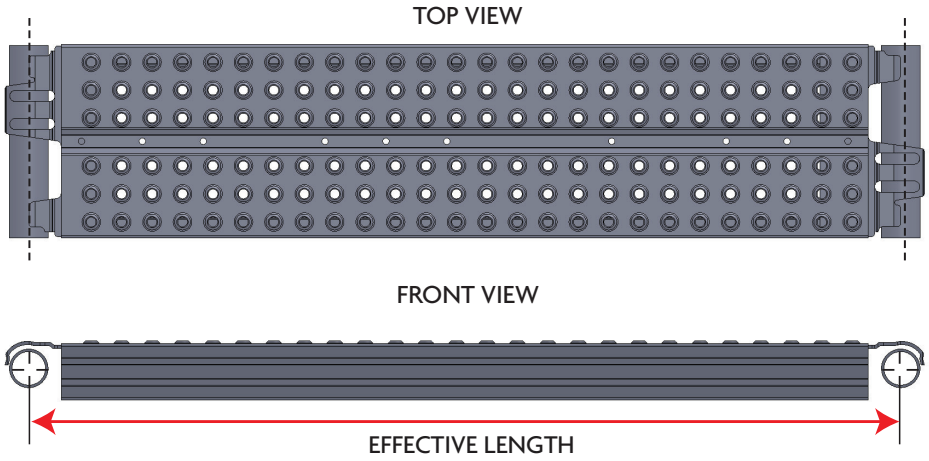
FRONT VIEW



Product Code	Description	Effective Length (in)	CPL (lbs)	Uniform Load lb/ft^2
WBSSP3	3' Steel Plank	36	770	630
WBSSP36	3'-6" Steel Plank	42	625	515
WBSSP4	4' Steel Plank	48	550	415
WBSSP5	5' Steel Plank	60	450	285
WBSSP6	6' Steel Plank	72	380	200
WBSSP7	7' Steel Plank	84	325	140
WBSSP8	8' Steel Plank	96	290	110
WBSSP9	9' Steel Plank	108	260	80
WBSSP10	10' Steel Plank	120	250	75

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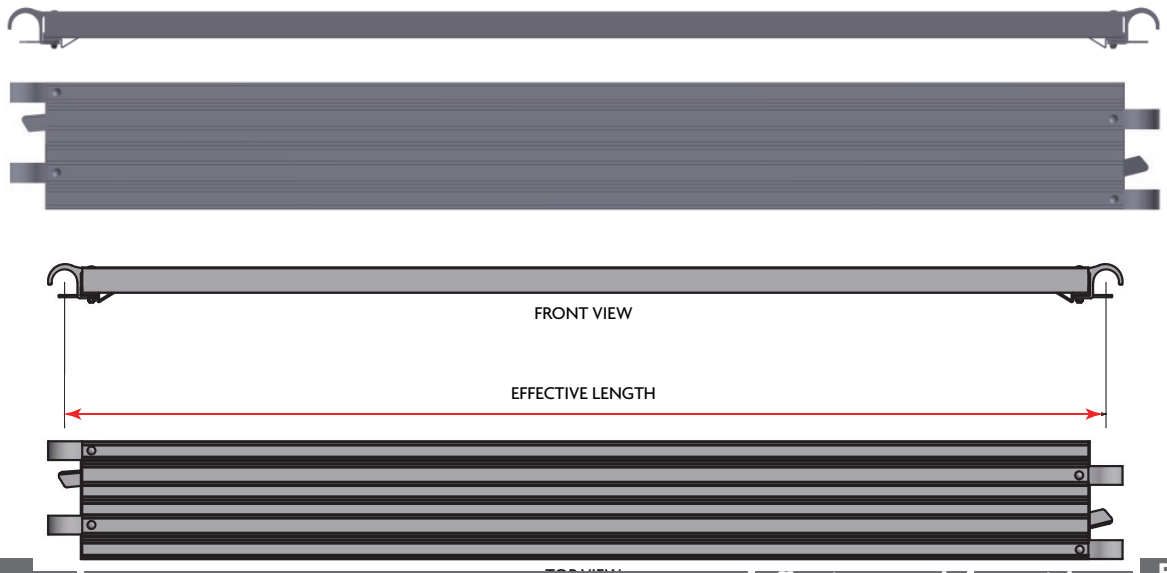
9-1/2" LOW PROFILE STEEL PLANK



Product Code	Description	Effective Length		Weight		Rated Load lb/ft^2
		Inches	Meters	Lb	Kg	
WBCS20	2' Plank w/ Hooks	24	0.61	10.9	5.0	100
WBCS22	2'-2" Plank W/ Hooks	25.6	0.65	11.4	5.2	100
WBCS25	2'-5" Plank w/ Hooks	29.1	0.74	12.6	5.7	100
WBSC26	2'-6" Plank w/ Hooks	29.5	0.75	12.7	5.8	100
WBCS36S	3'-6" S Plank w/ Hooks	42	1.07	16.6	7.6	100
WBCS36	3'-6" Plank w/ Hooks	42.8	1.09	16.9	7.7	100
WBCS39	3'-9" Plank w/ Hooks	45.2	1.15	17.7	8.0	100
WBCS50	5' Plank w/ Hooks	60	1.52	22.4	10.2	100
WBCS52	5'-2" Plank w/ Hooks	61.9	1.57	23.0	10.4	100
WBCS60	6' Plank w/ Hooks	72	1.83	26.2	11.9	100
WBCS70	7' Plank w/ Hooks	84	2.13	30.0	13.6	100
WBCS80	8' Plank w/ Hooks	96	2.44	33.9	15.4	100
WBCS100	10' Plank w/ Hooks	120	3.05	41.6	18.9	75

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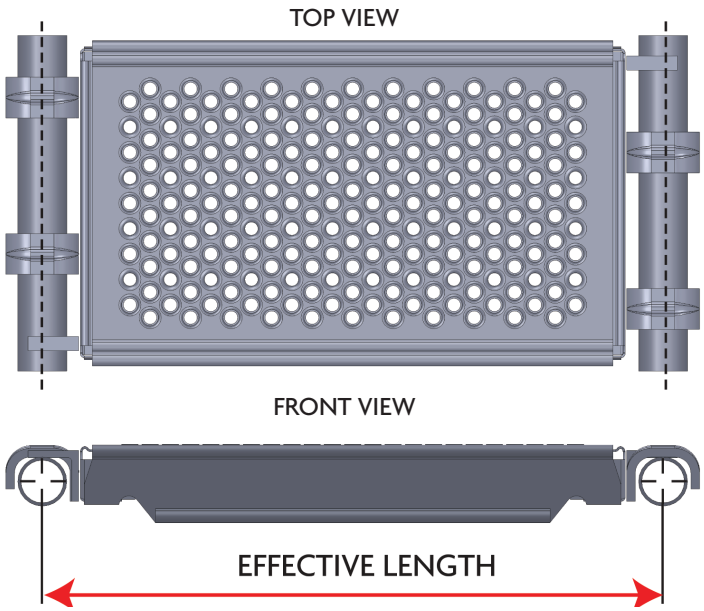
9-1/2" ALL ALUMINUM WALK BOARD



Product Code	Description	Effective Length		Weight		Rated Loads lb/ft^2
		Inches	Meters	Lb	Kg	
WBAA953	9.5"x3' All Alumn Walk Board (o.914M)	36	0.91	7.7	3.5	75
WBAA9536S	9.5"x3'-6' All Alumn Walk Board (1.066M)	42	1.06	7.9	3.6	75
WBAA9539	9.5x3'-9" All Aumn Walk Board (1.15M)	45	1.14	9.03	4.1	75
WBAA954	9.5x4' All Alumn Walk Board (1.220M)	48	1.22	9.03	4.1	75
WBAA955	9.5x5' All Alumn Walk Board (1.524M)	60	1.52	11	5	75
WBAA9552	9.5x5'-2" All Alumn Walk Board (1.57M)	62	1.57	11.4	5.15	75
WBAA9555	9.5"x5'-5" All Alumn Walk Board (1.651M)	65	1.65	11.8	5.35	75
WBAA956	9.5"x6' All Alumn Walk Board (1.829M)	72	1.83	12.8	5.8	75
WBAA957	9.5"x7' All Alumn Walk Board (2.134M)	84	2.13	14.6	6.6	75
WBAA958	9.5"x8' All Alumn Walk Board (2.438M)	96	2.44	16.2	7.33	75
WBAA9586	9.5"x8'-6" All Alumn Walk Board (2.572M)	102	3.05	17.2	7.8	75
WBAA9510	9.5"x10' All Alumn Walk Board (3.048M)	120	3.07	19.4	8.8	50

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12-1/2" STEEL PLANK



Product Code	Description	Effective Length		Weight		Rated Load lb/ft^2
		Inches	Meters	Lb	Kg	
WBSWP2	2' Plank w/ Hooks	24	0.61	14	6.5	75
WBSWP22	2'-2" Plank w/ Hooks	26	0.65	15.7	7.1	75
WBSWP24	2'-4" Plank w/ Hooks	28	0.73	16.4	7.4	75
WBSWP211	2'-11" Plank w/ Hooks	35	0.88	18.7	8.5	75
WBSWP3	3' Plank w/ Hooks	36	0.91	21	9.3	75
WBSWP33	3'-3" Plank w/ Hooks	39	0.99	22	10	75
WBSWP36	3'-6" Plank w/ Hooks	42	1.09	24	10.8	75
WBSWP39	3'-9" Plank w/ Hooks	45	1.15	25	11.5	75
WBSWP4	4' Plank w/ Hooks	48	1.22	26	11.6	75
WBSWP43	4'-3" Plank w/ Hooks	51	1.29	25.6	11.6	75
WBSWP410	4'-10" Plank w/ Hooks	58	1.48	26.6	12.1	75
WBSWP5	5' Plank w/ Hooks	60	1.52	28.4	12.9	75

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12-1/2" STEEL PLANK cont.

Product Code	Description	Effective Length		Weight		Rated Load lb/ft^2
		Inches	Meters	Lb	Kg	
WBSWP52	5'-2" Plank w/ Hooks	62	1.57	30	13.6	75
WBSWP6	6' Plank w/ Hooks	72	1.83	35	16	75
WBSWP69	6'-9" Plank w/ Hooks	81	2.07	37	17	75
WBSWP7	7' Plank w/ Hooks	84	2.13	39	17.7	75
WBSWP8	8' Plank w/ Hooks	96	2.44	41	18.6	75
WBSWP86	8'-6" Plank w/ Hooks	101	2.57	43.2	19.6	75
WBSWP9	9' Plank w/ Hooks	108	2.74	45	20.5	75
WBSWP100	10' Plank w/ Hooks	120	3.05	46.8	21.23	75
WBSWP101	10'-1" Plank w/ Hooks	121	3.07	47.3	21.5	75

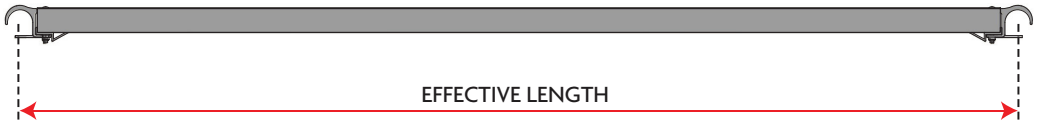
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19" ALL ALUMINUM PLANK

TOP VIEW



FRONT VIEW

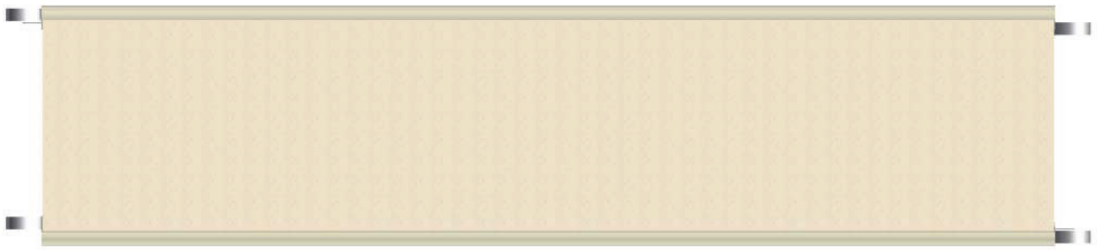


Product Code	Description	Effective Length		Weight		Rated Loads
		Inches	Meters	Lb	Kg	lb/ft^2
WBAA192	19" x 2' All Aluminum Walk Board	24	0.61			75
WBAA1922	19" x 2'2" All Aluminum Walk Board	26	0.65			75
WBAA19211	19"x 2'-11" All Aluminum Walk Board	35	0.88	15.1	6.85	75
WBAA193	19" x 3' All Aluminum Walk Board	36	0.91			75
WBAA1936S	19" x 3'-6" All Aluminum Walk Board	42	1.07	17.3	7.85	75
WBAA1939	19" x 3'-9" All Aluminum Walk Board	45	1.15	18.1	8.2	75
WBAA19310	19"x3'-10" All Aluminum Walk Board	46	1.17	18.5	8.39	75
WBAA194	19"x4' All Aluminum Walk Board	48	1.22			75
WBAA195	19"x5' All Aluminum Walk Board	60	1.52			75
WBAA1952	19"x5'-2" All Aluminum Walk Board	62	1.57			75
WBAA1955	19"x5'-5" All Aluminum Walk Board	65	1.65	24.3	11	75
WBAA196	19" x 6' All Aluminum Walk Board	72	1.83			75
WBAA197	19" x 7' All Aluminum Walk Board	84	2.13	28.9	13.1	75
WBAA198	19" x 8' All Aluminum Walk Board	96	2.44			75
WBAA1986	19"x8'-6" All Aluminum Walk Board	101	2.57	35.9	16.28	75
WBAA199	19"x9' All Aluminum Walk Board	108	2.74			50
WBAA1910	19'x10' All Aluminum Walk Board	120	3.05	39.3	17.81	50

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19" ALUMINUM PLYWOOD BOARD

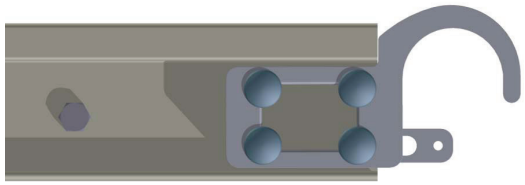
TOP VIEW



FRONT VIEW



H1 Hook



Product Code	Description	Effective Length		Weight		Rated Load lb/ft^2
		Inches	Meters	Lb	Kg	
WBAP1939H1	19"x3'-9" Aluminum Plywood Board	45	1.14	19.3	8.8	75
WBAP1952H1	19"x5'-2" Aluminum Plywood Board	62	1.57	25.4	11.5	75
WBAP197H1	19"x7' Aluminum Plywood Board	84	2.13	33.5	15.2	75
WBAP198H1	19"x8' Aluminum Plywood Board	96	2.44	37.6	17.1	75
WBAP1910H1	19"x10' Aluminum Plywood Board	120	3.05	43.7	19.8	50

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28" HATCH PLANK W/ ALUMINUM LADDER

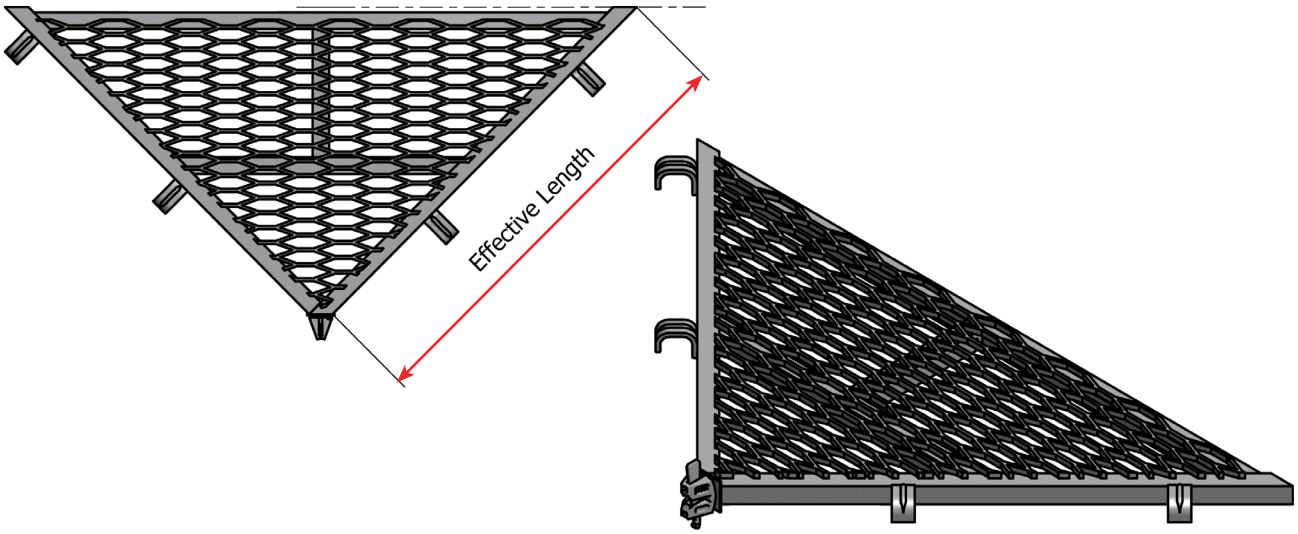


Product Code	Description	Effective Length		Weight		Rated Load lb/ft^2
		Inches	Meters	Lb	Kg	
WBAPSH287TH-H2	28"x 7' Aluminum Plywood Hatch Plank w/ Aluminum Ladder	84	2.13	72.8	33	50
WBAPSH2810TH-H2	28"x 10' Aluminum Plywood Hatch Plank w/ Aluminum Ladder	120	3.05	90.8	41.2	50

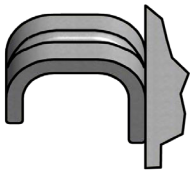
Product Code	Description	Effective Length		Weight		Rated Load lb/ft^2
		Inches	Meters	Lb	Kg	
WBAASH287TH-H2	28" x 7' All Aluminum Hatch Plank w/ Aluminum Ladder	84	2.13	82	37.2	50
WBAASH2810TH-H2	28" x 10' All Aluminum Hatch Plank w/ Aluminum Ladder	120	3.05	104.1	47.2	50

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RING LOCK CORNER BRACKET







Product Code	Description	Effective Length		Load Rating lb/ft^2
		Inches	Meters	
WBCB-RL22	Ring Lock Corner Bracket	26	0.65	75
WBCB-RL39	Ring Lock Corner Bracket	45	1.15	75

Note: WBCB-RL22 for use with RLBBC22
WBCB-R39 for use with RLBBC39

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Professional Service Industries, Inc.
6032 N. Cutter Circle, Suite 480
Portland, OR 97217
CCB No. 176269
Phone: (503) 289-1778
Fax: (503) 289-1918

Report No: CC:07023228-2-C1
Issue No: 1

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Drilled Core Concrete Report

Client: PROFESSIONAL MINORITY GROUP
27090 SE HWY 224
EAGLE CREEK, OR 97022

CC: HARRISON REECE
JOSE PADILLA
ROSA MARTINEZ

Project: PCC SYLVANIA HT WEST
PORTLAND, OR

Approved Signatory: Mike Kath (Special Project Manager)
Date of Issue: 4/4/2024

Sample Details

Sample ID: 07023228-2-C1
Date Received: 3/28/2024
General Location: PCC SY- HT Bldg; Level 1; Existing Walls See Map
Location: core locations: C1\1 through C1\10 (see attached map)
Date Cored: 3/27/2024
Time Cored:

Compressive Strength of Concrete Cores — ASTM C 42

Specimen ID	07023228-2-C1\1	07023228-2-C1\2	07023228-2-C1\3	07023228-2-C1\4	07023228-2-C1\5	07023228-2-C1\6
Date Tested	4/3/2024	4/3/2024	4/3/2024	4/3/2024	4/3/2024	4/3/2024
Time Tested						
Diameter (in)	3.74	3.74	3.74	3.73	3.73	3.73
Drilled Length (in)	8.00	8.25	8.00	8.25	8.00	10.25
Uncapped Length (in)	7.45	7.50	7.40	7.55	7.65	7.50
Capped Length (in)						
L/D	1.99	2.01	1.98	2.02	2.05	2.01
Correction Factor	1.00	1.00	1.00	1.00	1.00	1.00
Area (in^2)	10.99	10.99	10.99	10.93	10.93	10.93
Density (lb/ft^3)	144	145	147	149	147	143
Type of Cap	G	G	G	G	G	G
Maximum Load (lbf)	25335	28779	34447	30835	21994	28859
Load Direction	Perpendicular	Perpendicular	Perpendicular	Perpendicular	Perpendicular	Perpendicular
Fracture Type/Remarks	3	1	2	3	3	1
Compressive Strength (psi)	2310	2620	3140	2820	2010	2640

Average Compressive Strength (psi): 2590
Required Strength (psi):

Notes

1. Capping: B = Bonded ASTM 617,U = Unbonded ASTM C 1231

Remarks

Fracture Type: 1 = Cones on both ends; C1314: Conical Break, 2 = Vert crack/ cone opposite end; C1314: Cone & Shear, 3 = Vert cracking/no cones; C1314: Cone & Split

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Approved Signatory: Mike Kath (Special Project Manager)
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Sample Details

Sample ID: 07023228-2-C1
Date Received: 3/28/2024
General Location: PCC SY- HT Bldg; Level 1; Existing Walls See Map
Location: core locations: C1\1 through C1\10 (see attached map)
Date Cored: 3/27/2024
Time Cored:

Compressive Strength of Concrete Cores — ASTM C 42

Specimen ID	07023228-2-C1\7	07023228-2-C1\8	07023228-2-C1\9	07023228-2-C1\10		
Date Tested	4/3/2024	4/3/2024	4/3/2024	4/3/2024		
Time Tested						
Diameter (in)	3.73	3.72	3.73	3.73		
Drilled Length (in)	10.50	10.00	10.00	10.25		
Uncapped Length (in)	7.45	7.45	7.50	7.50		
Capped Length (in)						
L/D	2.00	2.00	2.01	2.01		
Correction Factor	1.00	1.00	1.00	1.00		
Area (in^2)	10.93	10.87	10.93	10.93		
Density (lb/ft^3)	142	143	140	144		
Type of Cap	G	G	G	G		
Maximum Load (lbf)	33370	24741	29348	25626		
Load Direction	Perpendicular	Perpendicular	Perpendicular	Perpendicular		
Fracture Type/Remarks	1	1	2	2		
Compressive Strength (psi)	3050	2280	2690	2350		

Average Compressive Strength (psi): 2590
Required Strength (psi):

Notes

1. Capping: B = Bonded ASTM 617,U = Unbonded ASTM C 1231

Remarks

Fracture Type: 1 = Cones on both ends; C1314: Conical Break, 2 = Vert crack/ cone opposite end; C1314: Cone & Shear, 3 = Vert cracking/no cones; C1314: Cone & Split

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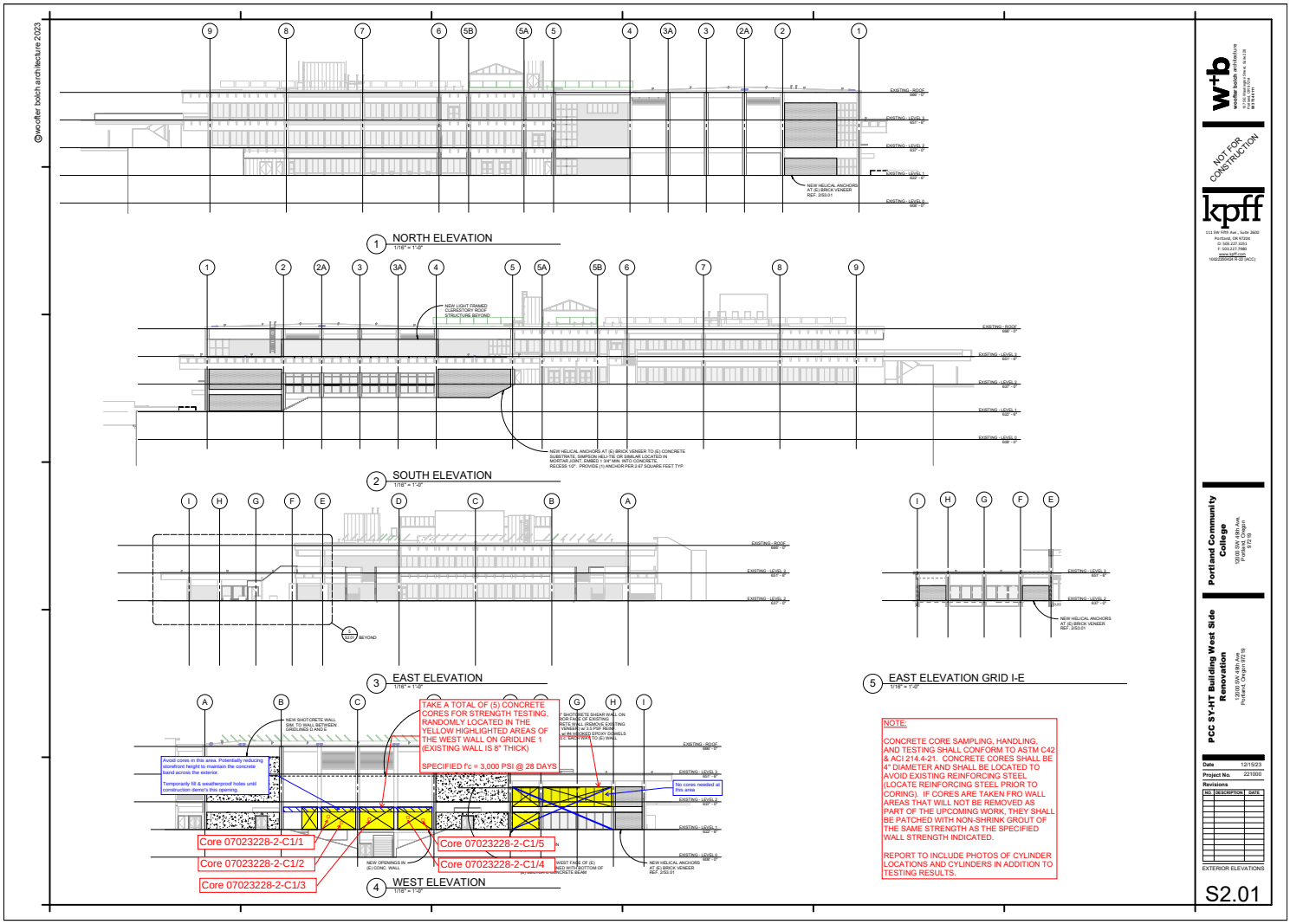
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Approved Signatory: Mike Kath (Special Project Manager)
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Core Location Map 1 of 2

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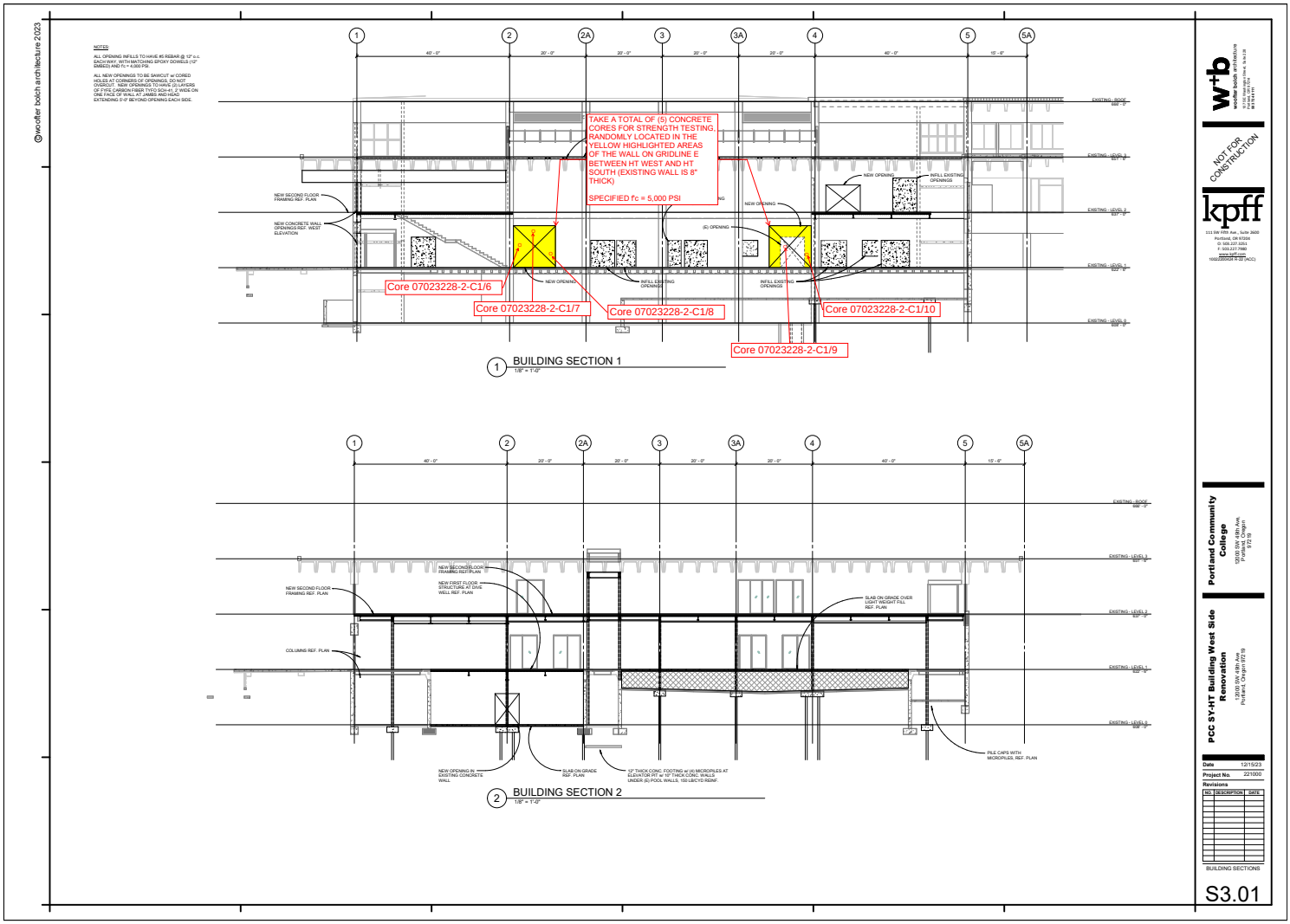
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Core Location Map 2 of 2

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