GENERAL

- These drawings shall not be used for pricing, costing, tender or construction unless noted as such
- Structural drawings are to be read in conjunction with other related drawings for dimensions and presence of openings, inserts, etc. Contractor shall compare related drawings and confirm all dimensions, reporting any discrepancies to Architect prior to commencement of the work. Do not scale the drawings. If discrepancies relating to structural work are found in the various documents, the more stringent provisions shall apply, unless approved by the EOR. Specifications shall control over these drawings and General Notes only where the specifications provide for more stringent requirements. Contractor, suppliers and subtrades are to ensure they are working with the 'Issued for Construction' drawings.
- These engineering drawings show the requirements for permanent, completed structure only Temporary works (including, but not limited to, falsework, shoring, re-shoring, bracing and underpinning) shall remain the responsibility of the contractor and shall conform to OSHA standards. Equilibrium Consulting is not responsible for the design or field review of temporary or
- ancillary work. See "CROSS-LAMINATED TIMBER (CLT)" for temporary shoring requirements of
- Location of required fire resistance ratings shall be confirmed with Architectural drawings and Confirm locations, configurations, sizes of curbs, upstands, downturns, and openings through floor
- and walls for ducts, conduits, and piping with Architectural, Mechanical, Electrical, Plumbing and Do not cut or drill openings in structural members without written permission by the EOR, except where explicitly shown in the structural drawings.
- Unsolicited proposals for substituted or alternative materials, structural members, connections, components, structural systems, etc other than those shown on the drawings may be proposed to the Architect and Engineer of Record for review and approval if they provide equal performance
- to those shown on the drawings. a. The design and detailing of the alternative systems is the responsibility of the
- contractor, supplier and/or fabricator. The contractor shall provide shop drawings, details and structural calculations for the unsolicited proposals per the architectural and structural drawings and design criteria signed and sealed by the SSE and submitted with a statement of product compliance with drawing standards and specifications when applicable. Refer to SHOP DRAWING
- SUBMITTALS, DELEGATED ENGINEERING and specific material sections of the general notes for shop drawing and field review requirements. Submittal documents for unsolicited proposal items shall be submitted for review to the

Architect and Engineer-of-Record. The review will be at the expense of the contractor on

- an additional fee basis and does not guarantee approval of the proposal(s). The Architect and Engineer-of-Record shall review all unsolicited proposal items, sign and stamp them as approved, and forward them to the Building Official with a notation indicating that the def documents have been found to be in general conformance with the design of the building and no exceptions are taken.
- The unsolicited proposal items shall not be installed until their design and submittal documents have been approved by the Building Official. If the proposed alternatives require revisions to the structural drawings, these revisions shall be made at the expense of the contractor.

STRUCTURAL DESIGN CRITERIA

- These drawings show structural work in conformance to the requirements of the 2019 California Building Code.
- Uniform Design Loads
- Uniform design loads are shown on Sheet S010

The structure has been designed for the uniform design loads only after concrete has reached its design strength. Construction loads shall not exceed design loads without explicit approval of the

- Superimposed dead loads (SDL) are non-structural dead loads including architectural toppings, finishes, partitions, roof materials and pagers. Structural dead loads include the total weight of the structural system itself, and are not included in the SDL.
- Roof Snow Load Criteria
- Wind Design Criteria Basic design wind speed, V = 92 mph
- Risk category = II Exposure category = 0 Internal pressure coefficient, GCpi = +/- 0.18
- Design components and cladding wind pressures = See S010 Seismic Design Criteria
- (mapped spectral acceleration at 0.2-second period) (mapped spectral acceleration at 1.0-second period)
- (site-specific spectral acceleration at 0.2-second period) (site-specific spectral acceleration at 1.0-second period) SDS = 1.041g (site-specific design spectral acceleration at 0.2-second period) SD1 = 1.055g (site-specific design spectral acceleration at 1.0-second period)
- Site class = D Risk category = II Seismic importance factor, le = 1.00 Seismic design category (SDC) = E Seismic force-resisting system = Steel buckling-restrained braced frame
- Response modification coefficient. R = 8.0 Analysis procedure used = modal response spectrum analysis Seismic response coefficient, Cs = 0.130
- Design base shear, Vs = 2237 kips

SHOP DRAWING SUBMITTALS

- 1. All shop drawings reviewed by the EOR constitute reviews for general concepts only; the detailed design remains the responsibility of Contractor/Fabricator. All components shall be assembled and erected in accordance with final reviewed shop and erection drawings. Shop drawing reviews by the EOR will be completed within 10 working days unless otherwise agreed in writing.
- A SSE is a registered and licensed Professional Engineer in the State of California. The SSE shall be responsible for the design, preparation of shop drawings, and field review of, but not limited to, the following: Structural elements designed by the Contractor, Sub-contractors, suppliers and/or
- Secondary structural elements and non-structural elements. The SSE shall sign and seal all shop drawings of components and connections designed by said Engineer. Clearly indicate the method and means of attachment and the magnitude of forces that the structure must withstand. Review by the Engineer of Record may result in the need to modify the means of connection.
- When satisfied at the end of field review the SSE shall provide a sealed letter to the EOR confirming that constructed work conforms to the sealed shop drawings. As well, the SSE shall provide sealed sketches for all field modifications made to the design.
- Where erection shop drawings are prepared with the aid of copies of structural drawings or electronic files, the contractor shall remove consultant names and reference to consultant drawings. The erection shop drawings shall be as if prepared independently by the contractor who shall be responsible for all content.
- 7. See specific material sections of the general notes for specific requirements.
- The EOR shall review shop drawings for work relevant to Structural drawings for the sole purpose of ensuring general conformance with the structural design concept. This review does not guarantee the supplier's design, details, and dimensions in the shop drawings are correct as those remain the responsibility of the Contractor or Sub-contractor. The Contractor or Sub-contractor shall also remain responsible for errors or omissions in the shop drawings as well as meeting all requirements of the contract documents.

DELEGATED ENGINEERING The contractor shall provide shop drawings, details and structural calculations for the items listed

- in note 5 per the architectural and structural drawings and design criteria. The items shall be designed by a Specialty Structural Engineer (SSE) who is a licensed Professional Engineer in
- Items designed by others shall be designed for loads and deflection limits shown on drawings and shall meet specifications, reference standards, and governing codes. Submittal documents for delegated engineering items shall be signed and sealed by the SSE and submitted for review to the Architect and Engineer-of-Record. Method and means of attachment to
- the primary structure, as well as magnitude and direction of forces imposed on the primary structure must be clearly indicated. The Architect, and Engineer-of-Record shall review all delegated engineering items, sign and stamp them as approved, and forward them to the Building Official with a notation indicating that the def documents have been found to be in general conformance with the design of the building and no exceptions are taken. Review by the EOR does not relieve the SSE from the responsibility
- The delegated engineering items shall not be installed until their design and submittal documents have been approved by the Building Official.
- Items designated as designed by others include: Cold formed steel framing
- Cladding and curtain wall mullions Secondary structural elements (see SECÓNDARY COMPONENTS AND THEIR ATTACHMENTS).
- Steel buckling restrained braces, connections and gussets Auger cast piles Feature stairs
- Elevators Raised access floor

STRUCTURAL OBSERVATION

- The EOR shall provide visual observation of the structural systems for general conformance to the drawings and specifications at significant stages of construction and at completion of the primary
- Structural observation may be conducted during any stage of work at the Engineer's discretion and does not guarantee the work which remains the responsibility of the Contractor. The Contractor shall remain responsible for the acts, omissions, or failure to complete work in accordance to contract documents.
- The contractor shall inform the EOR when the following items will be exposed for review no less than one week in advance of concealment:
- Pile cap and grade beam reinforcing prior to concrete placement Slab reinforcing and HBV shear connectors prior to concrete placement Steel components of the seismic force-resisting system
- Steel reinforcing plates at roof level See Architectural drawings and specifications for special inspections and testing for items
- including but not limited to: Fire protection Exterior finishes

Smoke evacuation

- The Shoring engineer shall provide visual observation of the temporary shoring systems for conformance to the shoring drawings and specifications prior to erection of structural elements
- that rely on the shoring systems for temporary stability. At the completion of the work, the Shoring engineer shall submit a written statement that periodic site visits were made and provide a final structural observation and monitoring report to the Building Official. The report shall confirm that the work was performed in accordance with the drawings and specifications.

SPECIAL INSPECTIONS and TESTS

- Special inspections shall conform to Chapter 17 of the 2019 California Building Code as amended by local governing codes, contract documents and approved submittals. Refer to S004 for the Statement of Special Inspections and specific special inspections
- Refer to project specification and specific material sections in the General Notes for additional information on special inspection, observation, and testing requirements. For the HBV system, the self tapping screws and pre-engineered aluminum hanger connectors
- special inspections and tests shall conform to manufacturer requirements, documentation, and instructions provide by the Structural Engineer. Special inspections and associated testing shall be performed by an approved accredited independent agency, retained by the owner, meeting the requirements of ASTM E329 (Materials). The inspection and testing agency shall provide the Architect and the Engineer of Record a copy

of their scope of accreditations. Special Inspectors shall be approved by the building official.

requiring special inspection was inspected, and any discrepancies noted in previous reports have

- Welding inspectors shall be qualified per Section 6.1.4.1.1 of AWS D1.1. The special inspector shall observe work for compliance with the code, specified standards and approved construction documents. All discrepancies shall be brought to the immediate attention of the contractor for correction and noted in the inspection report. All discrepancies that are not corrected shall be brought to the attention of the EOR and the building official. Following each inspection, the special inspector shall provide an inspection report to the building official, Architect, EOR, contractor, and owner. A final report shall be submitted indicating that the work
- The contractor must make accommodations for special inspections and testing to take place without additional cost. The contractor shall inform the Special Inspection Agency at least 24
- hours prior to performing any work that requires special inspection. Additional testing and inspections resulting from rejection of more than 5% of work tested will be at Contractor's expense.
- Inspection and testing by a testing agency or structural observation by the EOR shall not relieve the Contractor of the responsibility to provide their own inspection, testing and quality control as necessary to furnish materials and workmanship in accordance with the requirements of the contract documents.
- See Architectural drawings and specifications for special inspections and testing for: Fire Protection Exterior Finishes Smoke Evacuation
- INSPECTION TYPES Continuous: The full-time observation of work requiring special inspection by an approved
- special inspector who is present in the area where the work is being performed Periodic: The part-time or intermittent observation of work requiring special inspection by an approved special inspector who is present in the area where the work has been or is being performed at the the completion of the work.

FOUNDATIONS

- The foundation design is based on the parameters provided in the geotechnical report by Ninyo & Moore dated October 14, 2019 Project No. 403253004.
- The contractor is responsible for notifying the Geotechnical Engineer for site inspection prior to installation of any foundation systems. The Geotechnical Engineer shall also issue a written report stating that the soil conditions are adequate to provide the capacity to support the foundation. This report is to be forwarded to Equilibrium Consulting Inc. prior to Engineer's first inspection.
- Refer to Geotechnical Soils report for recommendations and design requirements regarding piling, soil slopes, minimum cover, drainage, preloading, backfill, sub-base preparation, etc.
- The Owner shall retain an approved testing agency to carry out density testing of sub-grade material for shallow foundations of lightly loaded facilities. Testing of sub-grade material is to be carried out immediately prior to installation of slab on grade components. Care must be taken to
- not disturb sub-grade after approval and prior to pouring concrete. Care must be taken to not disturb sub-grade after approval and prior to pouring concrete.
- 6. Contractor shall be responsible for all temporary drainage during excavation.
- Do not backfill retaining walls until cured minimum 14 days unless approved otherwise by the All pile caps shall be centered under columns and walls unless noted otherwise.
- Concrete placed under water shall conform to ACI 318-14. Provide 2" (50mm) thick concrete ground seal under footings/grade beam if required by site
- The contractor shall verify all elevations with Architectural drawings and Geotechnical Soils
- A Professional Structural Engineer hired by the Contractor shall carry out design and supervision of excavation, temporary or permanent supports, shoring, sheeting, bracing and underpinning of
- existing structures, streets, soil or utilities adjacent to the project site so that no horizontal movement or vertical settlement occurs. All costs are to be included in this contract.
- Where pile cap elevations vary, follow requirements of typical details shown on drawing. Contractor shall establish elevations based on all requirements including maximum slopes, Geotechnical, Electrical, Mechanical and Architectural information.
- 14. Use templates to place dowels and anchor rods before concrete is poured. Bottom 3" of excavations shall be finished by hand shovel or smooth-edged excavator bucket.

the Geotechnical Engineer

FOOTING DEPTH

BEARING TO BE CONFIRMED

200 [8"] MIN OR

FOOTING DEPTH

₹ - - - - - - - - - - - - - - |

BEARING TO BE CONFIRMED -

THE CONTRACTOR MAY SELECT EITHER DETAIL

TYPICAL STEPPED STRIP FOOTING

50 [2"] FOOTING DIMENSION
MIN SEE PLAN

TYPICAL FOOTING EARTH FORMS

BY GEOTECHNICAL ENGINEER

- Final subgrades shall be firm and free of loose and/or undisturbed materials. No utilities, pipes, or other elements shall penetrate a foundation element except as specifically
- shown on the drawings. Where suitable bearing material is not encountered at the specified bottom of foundation elevation, over-excavate to suitable material and place lean concrete to the specified bottom of foundation elevation. In all instances, the suitability of the bearing material shall be determined by

SLOPE TOP OF FOOTING

SLOPE TOP OF FOOTING

- Placement of concrete, including proper vibration and curing
- mix design, site care and adequate vibration. Protect against damage during stripping and entire construction period. See Architectural drawings for slab elevations, drainage, slopes and locations of reglets, reveals and chamfers.
- Blockouts, nailers, conduits, ducts, pipes, sleeves and other openings are subject to approval by the Engineer. Openings and conduits are not permitted in wall zones, within 39" [990mm] of wall ends and
- area shall not be permitted.
- compressive strength for columns and walls and 75% of specified compressive strength for slabs and beams.
- shall be determined from field-cured cylinders.
- 10. Minimum of 72 hours shall elapse between adjacent concrete placements. 11. All hot and cold weather concrete work shall be carried out in accordance with ACI 318-14.
- ACI 301 Specification for Structural Concrete
- CRSI Manual of Standard Practice
- Concrete Floor and Slab Construction Hot Weather Concreting ACI 306 Cold Weather Concreting Detailing for Reinforcing
- 12. Concrete slabs, including topping slabs and concrete placed on steel deck, shall be placed so that the slab thickness is at no point less than that indicated on the drawings. This will require that the slab not be cast dead level where supporting beams, girders, or trusses have an upward camber.
- properties. The General Contractor shall meet all documentation and quality control requirements. 14. The Supplier shall be certified and meet all documentation requirements.
- documentation shall be used to evaluate anticipated 56 day strength of the mix as placed on site within 14 days 17. Take measures to minimize shrinkage cracking including covering and dampening concrete.
- centered on column lines, and maximum at 15'-0" (4500mm) on center.
- Curing / Sealing Compounds: ASTM C309, clear with application rate to suit requirements pre-approved by the Engineer. Co-ordinate type, compatibility, and use with waterproofing membrane and flooring trades and apply where scheduled. Curing compounds are not permitted for loading dock structural slab on grade for Class C-XL
- 22. Chloride ion penetrability for exposure class C- shall be in accordance with 19.3.2.1 of ACI 318-14. The maximum water/cement ratio and air content for each exposure class shall be in accordance with
- 24. Apply a coat of the specified Curing and Hardening Compound to exposed interior concrete floors. Apply the compound in strict accordance with the directions of the manufacturer.

- 1. All work shall comply with the recommendations in the geotechnical report. Where recommendations cannot be met, the contractor shall notify the geotechnical engineer and engineer of record prior to proceeding with work.
- The contractor shall conduct a pre-production indicator piling program in accordance with geotechnical recommendations including a load testing of piles. The Contractor shall keep accurate records of pile installation including, but not limited to, date, weather conditions, pile identifications, start and completion time of drilling and grouting. The contractor shall monitor auger rotation, auger depth, penetration rate, torque delivered to the
- auger, crowd force, lifting rate, volume of grout placed, and pressure of the grout near the auger tip in accordance with the geotechnical report. All parameters shall be automatically recorded as a function of auger depth at intervals of 2ft or less and submitted to the geotechnical engineer for Where horizontal distance between adjacent piles is less than 6 pile diameters, the second pile
- shall not be drilled until the grout in the first pile has set. The contractor shall ensure cement grout is placed in a continuous operation for each pile. Pile design is by Berkel & Company Contractors, Inc. See sheet F-200 for pile types, cutoff elevation and tip elevation.

AUGER CAST PILES

- 8. The owner shall retain Ninyo & Moore for the observation of drilling and grouting of the auger cast piles. The retention of Ninvo & Moore for observation does not replace or limit, in any way, the Contractor's responsibility to provide their own inspection, testing and quality control procedures to furnish materials and workmanship in accordance with the requirements of the contract
- The owner will appoint and pay for services of an independent testing firm for testing of cement grout as specified above. 10. Notify the Engineer at least 48 hours prior to commencement of piling work.

- 11. Auger cast piles shall be installed within 3 inches of the intended location and within 2% of plumb.
- 12. Concrete Cut-off Elevation: plus 25 mm (1") to minus 75 mm (3"). 13. The contractor shall have all piles surveyed. If tolerances are exceeded and result
- in excessive eccentricity, propose corrective construction to compensate. Submit proposal for review and approval by Engineer prior to proceeding.

- All concrete shall conform to "Building Code Requirements for Structural Concrete" (ACI 318-14) and "Specifications for Structural Concrete" (ACI 301-10). Cement shall be Type II Portland Cement unless noted otherwise. Normal weight concrete for various purposes shall be as follows: MAX SLUMP MAX SIZE STRENGTH AGGREGATE CONTENT inch (mm) psi (MPa) inch (mm) 3/4" (20) 3/4" (20) Grade beams 5000 (35) 6±1.5 4000 (28) Foundations & footings SLABS ON GRADE / TOPPING
- 0% (as mixed) N Topping concrete 5000 (35) 0% (as mixed) 3"(75) Exposed Topping 5000 (35) CLT TOPPING SLABS (WOOD CONCRETE COMPOSITE)
- NOTE: Use F-2 exposure for exterior concrete elements, and N exposure for

Concrete strengths specified above shall be at 28 days.

- (N is the equivalent exposure class to C0, F0 & S0) Cement type for exposure classes S0, S1, S2, and S3 shall be as outlined in Table 19.3.2.1
- Slumps listed are before the addition of super plasticizers. Tolerance in specified slump shall be 3/4" [20mm]. The General Contractor and Supplier shall determine slump and aggregate size
- to meet placement, finishing requirements without segregation, and Owner's specifications. The unit weight of concrete shall be 145 lb/ft³ ±3% (24 kN/m³) unless noted otherwise. No calcium chloride permitted in any form in the concrete mixes.
- Submit mix designs to the Engineer and testing agency for review and approval prior to placement. Mix design submittals shall identify the elements for which they are intended.
- Concrete to be exposed to freezing temperatures in the finished project shall be air-entrained per specification requirements and have a 28-day compressive strength not less than 5000 psi (35 MPa) 3. Perform all work in accordance with ACI 318-14 including the following:
- Construction tolerances. Fabrication and placement of reinforcing.
- 4. Take all precautions to ensure exposed concrete achieves finish desired by Architect, including proper forming,
- Unless noted otherwise, exposed corners shall be 90°.
- intersections and columns Where permitted, space openings 2 diameters, or minimum 6" [150mm] apart Where permitted, single openings larger than 12" [300mm] or a group of openings occupying together more than 1.0 sq.ft. [300x300mm] in any 10 sq.ft. [1 sq. meter]
- Expansion and/or construction sequence joints shall be installed in concrete structures greater than 150 ft. [45m] in length, details and locations shall be discussed with and approved by the Engineer in writing prior to Stripping of forms for structural elements is not allowed until concrete strength has reached 50% for specified
- Re-shoring of suspended concrete slabs, slab bands and beams must be approved by shoring engineer prior to stripping. Shores shall remain until specified compressive strength has been reached. Strength of concrete
- Stripping of forms for Architectural concrete is not allowed until concrete strength has reached 1750 psi [12 MPa].
- STANDARD SPECIFICATIONS AND REFERENCE STANDARDS
- Follow the latest recommendations and specifications of the American Concrete Institute: Measuring, Mixing, Transporting and Placing Concrete
- General Design of Items Not Otherwise Specified
- 13. The General Contractor, in conjunction with the concrete supplier, shall meet the placing and finishing site requirements as well as the Owner's specified performance requirements for plastic and hardened mix
- The Supplier shall provide test results for each proposed mix design at the request of the Owner Test results shall meet the requirements specified for strength, durability, and shrinkage. 16. The Supplier shall provide accelerated strength test data or alternative acceptable documentation for each proposed mix design for 56 day strength specifications at the Owner's request. Test results or alternati
- 18. Unless noted otherwise, provide 1/8"x11/4" (3x30mm) deep contraction joints in two directions in grade slabs
- 19. Concrete curing for each exposure class shall be in accordance with ACI 308R.
- 21. Corrosion inhibitors are to be used in concrete in areas noted on the structural drawings, as well as in stairs and stair landings within parkades. Use 270 oz. per cubic yard of "DCI S" by Grace Construction Products, "Rheocrete CNI" by Master Buildings Technologies Inc., or approved equivalent for corrosion inhibitors in concrete where shown on Structural drawings. Alternatively, use C-2 concrete per Table 4.3.1 & Table 4.4.2 of
- Table 19.3.2.1 of ACI 318-14.

ANCHOR BOLT

BOTTOM LOWER LAYER

FACTORED COMPRESSION FORCE

COMPLETE JOINT PENETRATION

BUL BOTTOM UPPER LAYER

CAST IN PLACE

CENTERLINE

COUNTERSINK

COMPLETE WITH

DCW DEMAND CRITICAL WELD

DIMENSION

DIRECTION

DEAD LOAD

ELEVATION

EMBED EMBEDDED / EMBEDMEN

EOR ENGINEER OF RECORD

FT/ST FULLY THREADED SELF TAPPING

FT/RH FULLY THREADED REVERSE HEAD

GENERAL CONTRACTOR

HORIZONTAL AND VERTICAL

HOT DIPPED GALVANIZED

LONG LEG HORIZONTAL

LAMINATED STRAND LUMBER

FULL SIZE SECTION

PARTIAL SECTION

ELEVATION

REVISION

CFS STUD WALL

SOLID BLOCKING

PRE CAMBER:

CCX.X.X COLUMN CONNECTION TYPE:

IN ADDITION: CCX(S).0.0

CCX/X.0.0

- - CROSS BRACING

SOLID BLOCKING UNDER

SLAB/PANEL STEP INDICATION

STEEL MOMENT CONNECTION

STEEL BEAM WEB PENETRATION

CENTRE OF BEAM

- PERIMETER CONDITION:

1 = YES, SEE 2/S401

AS PER TYPICAL DETAILS

(WHEN APPLICABLE): S = SINGLE PURLIN,

D = DOUBLE PURLIN,

(WHEN APPLICABLE):

(SINGLE SIDE ONLY)

— FIRE RATING CONDITION: DETAIL REMOVED

— COLUMN CONNECTION TYPE NUMBER

— PURLIN TO COLUMN CONNECTION

1 EACH SIDE OF COL, N/S DIR

0 = NO ADJACENT END CONNECTION TYPE

X = ADJACENT END CONNECTION TYPE

— TYPICAL COLUMN CONNECTION TYPE

1 SIDE ONLY, N/S DIR

— ADJACENT SIDE CONNECTION

0 = NO (TYPICAL)

CCX.0.0

FOR MORE INFÓRMATION SEE PLANS AND DETAIL 7 / S501

CANTILEVER END -

CAMBER APPLIED @

CANTILEVERED END

POINT LOAD FROM ABOVE

CLT PANEL SPAN DIRECTION

LONG LEG VERTICAL

(TIMBERSTRAND)

(MICROLLAM)

LVL LAMINATED VENEER LUMBER

HOOK ONE END

HOOK TWO ENDS

INSIDE FACE

INTERIOR

EACH SIDE

EACH WAY

EXIST EXISTING

FTG FOOTING

EXT EXTERIOR

FDN FOUNDATION

GALV GALVANIZED

HORIZ HORIZONTAL

KD KILN DRIED

LOC'S LOCATIONS

COLUMN CONC CONCRETF

CONN CONNECTION

CONT. CONTINUOUS

CYL CYLINDER

DBLR DOUBLER

DFIR DOUGLAS FIR

DWG(S) DRAWING(S)

CONTROL JOINT

COLD-FORMED STEE

COMPRESSION LENGTH

ALTERNATE

ARCH ARCHITECTURAL

ADD'L ADDITIONAL

BTW BETWEEN

LEVEL REFERENCING All annotations and dimensions relating to gridlines and levels are to be verified against Architectural Drawings. MOMENT CONNECTION Contractor shall compare related drawings and confirm all dimensions, reporting any discrepancies to Architect MECH MECHANICAL prior to commencement of the work. Do not scale the drawings. If discrepancies relating to structural work are M/f FACTORED MOMENT found in the various documents, the more stringent provisions shall apply, unless approved by the EOR. M&M MEANS & METHOD BRB(S) BUCKLING-RESTRAINED BRACE(S) No OR # NUMBER NTS NOT TO SCALE BRBF BUCKLING-RESTRAINED BRACE FRAME NELSON STUD ON CENTRE OUTSIDE DIAMETER OUTSIDE FACE OWSJ OPEN WEB STEEL JOIST PLYWOOD PARALLEL STRAND LUMBER (PARALLAM) POST-TENSION PRESSURE TREATED PT/HX PARTIALLY THREADED HEX HEAD PT/CS PARTIALLY THREADED COUNTERSUNK HEAD PT/CYL PARTIALLY THREADED CYLINDER HEAD PT/ST PARTIALLY THREADED SELF TAPPING PT/WH PARTIALLY THREADED WASHER HEAD REINF REINFORCING RH REVERSE HEAD R/W REINFORCE WITH SLAB BAND or SOLID BLOCKING SLIP CRITICAL SFRS SEISMIC FORCE RESISTING SYSTEM SOG SLAB ON GRADE SPEC(S) SPECIFICATION(S STAINI ESS STEFI SPECIALTY STRUCTURAL ENGINEER STAG STAGGER STEEL SYM SYMMETRICAL SW SHEARWALL FACTORED TENSION FORCE TONGUE & GROOVE THICK THROUGH

TIE JOIST

TOP OF

TYPICAL

TRANSV TRANSVERSE

U/S UNDER SIDE

WD WIDE or WIDTH

WH WASHER HEAD

WWM WELDED WIRE MESH

WP WORK POINT

TENSION I ENGTH

TOP LOWER LAYER

TOP OF CONCRETE

TOP UPPER LAYER

UNO UNLESS NOTED OTHERWISE

V/f FACTORED SHEAR FORCE

UNIFORMLY DISTRIBUTED LOAD

VP/ST VARIABLE PITCH FULLY THREADED

SELF TAPPING SCREWS

TOP OF STEEL

DRAWING LIST

S124

- **GENERAL NOTES & TYPICAL DETAILS GENERAL NOTES & TYPICAL DETAILS GENERAL NOTES & TYPICAL DETAILS** SPECIAL INSPECTIONS
- STRUCTURAL LOAD MAPS
- FOUNDATION / LEVEL 01 PLAN **S102 LEVEL 02 PLAN** S103 **LEVEL 03 PLAN**
 - **LEVEL 04 PLAN LEVEL 05 PLAN ROOF PLAN**

LEVEL 03 CLT PANEL LAYOUT PLAN

LEVEL 04 CLT PANEL LAYOUT PLAN

__ _ _ _ _

Architectural raised access floor levels

verify with Architectural Drawings

verify with Architectural Drawings

LEVEL 01 elevation 0' - 0" = 12.25'

verify with Architectural/Civil Drawings

on survey and civil documents

Relative Structural levels

- ROOF MEP AND PV SUPPORT FRAMING PLAN S107 **LEVEL 01 REINF PLAN S112 LEVEL 02 REINF PLAN**
- **S114 LEVEL 04 REINF PLAN S115 LEVEL 05 REINF PLAN LEVEL 02 CLT PANEL LAYOUT PLAN**

LEVEL 03 REINF PLAN

- S125 LEVEL 05 CLT PANEL LAYOUT PLAN ROOF CLT PANEL LAYOUT PLAN
- **FULL BUILDING SECTIONS FULL BUILDING SECTIONS BRACE FRAME ELEVATIONS**
- **S211 BRACE FRAME ELEVATIONS BRACE FRAME ELEVATIONS S213 BRACE FRAME ELEVATIONS**
- **TYPICAL PILE CAP DETAILS** S301 **TYPICAL PILE CAP DETAILS**
- TYPICAL FOUNDATION DETAILS TYPICAL GL COLUMN BASE AND BEARING DETAILS **TYPICAL GL GIRDER & COLUMN CONN DETAILS**

TYPICAL GL PURLIN & COLUMN CONN DETAILS

TYPICAL CLT AND GLAZING SUPPORT DETAILS

- TYPICAL DOUBLE GL GIRDER & COLUMN CONN DETAILS **TYPICAL WOOD BEAM CONN DETAILS**
- **WOOD DETAILS** WOOD DETAILS
- TYPICAL CLT TOPPING SLAB DETAILS STEEL BASE PLATE DETAILS TYPICAL STEEL DETAILS **S502** STEEL DETAILS
- **S503** STEEL DETAILS STEEL DETAILS TYPICAL BRBF DETAILS **COREBRACE BRB ELEVATIONS**
- COREBRACE BRB DETAILS COREBRACE BRB SCHEDULES COREBRACE BRB SCHEDULES

COREBRACE BRB ELEVATIONS

TYPICAL DIAPHRAGM TO BRBF DETAILS

SECONDARY AND MISCELLANEOUS ITEMS

TYPICAL DIAPHRAGM DETAILS **CLT PANEL ASSEMBLY DETAILS** **CSG CONSULTANTS, INC.** THESE PLANS AND DETAILS ARE

Equilibrium Consulting Inc Structural Engineers

This drawing and design as an instrument of

service is, and at all times remains, the proper

of Equilibrium Consulting Inc. and may not be

information shown on the drawing is for use i

this specific project only and shall not be used

responsible for all dimensions on the job and this office shall be informed of any discrepancies

and variations shown on this drawing prior to

commencement of work. Do not scale this

obligation to supply CAD files to the contractor

office. Contractors shall verify and be

300-1060 West 8th Ave Vancouver BC V6H 1C4

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eqcanada.com

or sub-contractors.

info@eqcanada.com

THE APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED TO BE A PERMIT FOR ANY VIOLATION OF ANY CODE OR ORDINANCE LOK C, PHIROZE W., YVONNE C. THESE PLANS SHALL BE ON THE JOB FOR ALL REQUESTED INSPECTIONS

REVISIONS ISSUED FOR PERMIT 06/01/2020 1 PLAN CHECK RESPONSE 1 2 PLAN CHECK RESPONSE 2

9 MAR 2020 ISSUE DATE: PROJECT NO:

GENERAL NOTES

REINFORCING

Reinforcement work of detailing, fabrication and erection shall conform to "Building Code Requirements for Reinforced Concrete" (ACI 318-14), "ACI Detailing Manual - 2004" (SP-66), CRSI Manual of Standard Practice, 28th Edition" (2009), and "Structural Welding Code -Reinforcing Steel" (AWS D1.4-2011).

Reinforcing shall be new billet steel conforming to the following standards: ASTM A615 Grade 60 (Yield stress 60 KSI) Steel Reinforcement Weldable Steel Reinforcement ASTM A706 Grade 60 (Yield stress 60 KSI) (welding to ASTM A706) Welded wire mesh ASTM A497/A497M-07 ASTM A775M-97e2 and ASTM D3963 Epoxy coated reinforcement All codes to be latest edition. NOTE: weldable reinforcement (including deformed bar anchors) must be clearly

identified on each piece. Reinforcement shall have concrete protection as follows, unless noted otherwise:

a. Fire resistance rating:		
ELEMENT	FIRE RESISTANO 0-2 hr.	
All surfaces placed in contact with ground	3" (75)	3" (75)
Formed surfaces exposed to ground or weather	2" (50)	2" (50)
Walls	1 1/4" (32)	1 1/4" (32)
Column ties	011 (50)	0" (50)
- interior	2" (50)	2" (50)
- exterior	2" (50)	2" (50)
Retaining walls	4" (05)	4.0/0" (05)
- inside face	1" (25)	1 3/8" (35)
- ground or earth side	2" (50)	5" (50)
Susp slabs and slab bands	1" (25)	1 1/2" (40)
Structural slab on grade, zone ties, non-retaining walls	1" (25)	1 3/8" (35)
Other, unless otherwise noted	1 1/2" (40)	1 1/2" (40)
NOTE: Provide at least minimum cover per A0	CI 318-14 Section 2	0.6.1.3.
b. Concrete with no membrane and expos	sed to chlorides	23/8" (60) or 2d

c. All #10 bars to have 3 hr fire resistance cover Note: largest cover required governs. Refer to Architectural and Structural drawings for areas requiring 3 hr fire ratings, and Structural drawings for areas classified as b) above. All reinforcing bars shall be accurately placed, chaired and tied securely to prevent displacement and to maintain the specified cover. Install column reinforcement accurately with templates. Provide hooked dowels from bottom of footing to match and lap with verticals. Install masonry

whichever is greater

dowels accurately to align with center of walls. Chairs shall be protected against rusting where required for appearance. Do not wet dowel reinforcement unless approved by the Engineer. Provide epoxy coated rebars where noted on plan in accordance with ASTM A934/A934M-13 latest edition. Chair bars with plastic chairs and tie with plastic coated wire.

Minimum reinforcement shall be as follows unless noted otherwise: Wall reinforcement:

MINIMUM CONCRETE WALL REINFORCEMENT			
WALL THICKNESS	VERTICAL REINFORCING	HORIZ REINFORCING	
Less than 10" [250]	#4@12" AT MID DEPTH	#5@12" AT MID DEPTH	
10"[250] to 12"[300]	#4@12" EACH FACE	#4@12" EACH FACE	
>12" [300] to 18" [450]	#4@12" EACH FACE	#5@12" EACH FACE	
	OVE MINIMUM REINFORCEMENT IN A FIS NOT INDICATED ON THE DRAWIN		

b. Slab reinforcing (or temperature reinforcing):

MINIMUM SLAB REINFORCEMENT			
SLAB THICKNESS	REINFORCING		
4" [100]	#4@18" TWO WAYS		
5" [125]	#4@16" TWO WAYS		
6" [150]	#4@12" TWO WAYS		
7" [175]	#4@11" EACH FACE		
7 ¹ / ₂ " to 8 ¹ / ₂ " [190 to 215]	#5@18" EACH FACE		
9" to 10" [225 to 250]	#5@16" EACH FACE		
11" to 12" [275 to 300]	#5@14" EACH FACE		

OR 18" PER ACI 318-18 SECTION 7.12 Footing reinforcement: 2-#5 continuous plus dowels of same size and spacing as wall vertical reinforcing.

Where there is a conflict between locations of column vertical bars and beam or slab horizontal bars, the column bars shall remain in their designated positions and beam or slab bar locations

- All bars shall be continuous, properly lapped at splices. At corners and intersections, horizontal reinforcement shall be bent and lapped.
- Unless noted otherwise openings in walls shall have 2-#6 extra each side extending 2'-6" (750) past corners, plus 1-#5 x4'-0" (diagonal at each corner. Welding of reinforcing must conform to AWS-D1.4 and is permitted only with ASTM A706
- reinforcing bars. 11. Provide contingency reinforcing additional to all other requirements, with "add" and "delete" unit prices included in bid. Include reinforcing required for non-structural concrete and masonry shown
- 12. Do not substitute deformed wire for reinforcing bars without prior approval from the
- 13. Do not tack or spot-weld crossing bars. Tie bars together at lap. EMBEDMENT / DEVELOPMENT AND SPLICE LENGTHS:
- 14. All lengths shown are for Fy=60 ksi rebar.

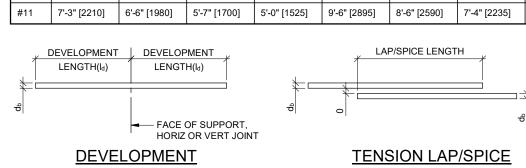
d. Other locations : #5 @16" [400mm]

- All embedment and splice lengths shall be as indicated on the drawings. Where the length is specified, such dimensions shall apply. 16. If no embedment length is specified on the drawings, it shall be a tension embedment,
- except in columns which shall be a compression embedment If no splice length or type is specified on the drawings it shall be a tension splice, except in columns which shall be a compression splice.
- Lap splices not shown on the drawings shall not be allowed unless approved in writing by the Engineer.

COMPRESSION DEVELOPMENT AND SPLICE LENGTHS					
	COMPRESSION	COMPRESSION DEVELOPMENT LENGTHS			
REBAR SIZE	LAP/SPLICE LENGTHS	CONCRETE STRENGTH			
		4000 psi (25 MPa)	4500 psi (30 MPa) 5000 psi (35 MPa)		
#4	1'-3" [380]	10" [250]	9" [225]		
#5	1'-63/4" [475]	12" [305]	11" [280]		
#6	1'-10 ¹ / ₂ " [570]	1-2" [355]	1'-2" [355]		
#7	2'-2 ¹ / ₄ " [665]	1-5" [430]	1'-4" [405]		
#8 2'-6" [760]		1'-7" [480]	1'-6" [455]		
#9	2'-10" [865]	1'-10" [560]	1'-9" [535]		
#10	3'-2" [965]	2'-0" [610]	1'-11" [585]		
#11	3'-61/4" [1075]	2'-3" [685]	2'-2" [660]		

REINFORCING (Continued)

20. Tension Lengths, unless noted otherwise, shall be as follows: **TENSION DEVELOPMENT AND SPLICE LENGTHS** TENSION DEVELOPMENT LENGTHS TENSION LAP / SPLICE LENGTHS TOP BARS OTHER BARS TOP BARS OTHER BARS
 5000 psi (35 MPa)
 4000 psi (25 MPa)
 5000 psi (35 MPa)
 4000 psi (25 MPa)
 5000 psi (25 MPa)
 4000 psi (35 MPa)
 5000 psi (35 MPa)
 5000 psi (35 MPa)
 5000 psi (35 MPa)
 35 MPa)< 1'-7" [480] 1'-5" [430] 1'-3" [380] 1'-1" [330] 2'-1" [635] 1'-11" [585] 1'-8" [510] 1'-5" [430] 2'-1" [635] | 1'-11" [585] | 1'-7" [480] | 1'-5" [430] | 2'-9" [840] | 2'-6" [760] | 2'-1" [635] | 1'-11" [585] 2'-7" [790] 2'-4" [710] 2'-0" [610] 1'-10" [560] 3'-5" [1040] 3'-1" [940] 2'-8" [810] 2'-5" [735] 3'-1" [940] | 2'-10" [865] | 2'-5" [735] | 2'-2" [660] | 4'-1" [1245] | 3'-9" [1145] | 3'-2" [965] | 2'-10" [864] 4'-6" [1370] | 4'-1" [1245] | 3'-6" [1065] | 3'-2" [965] | 5'-11" [1805] | 5'-4" [1625] | 4'-7" [1400] | 4'-2" [1270] 5'-2" [1575] | 4'-8" [1420] | 4'-0" [1220] | 3'-7" [1090] | 6'-9" [2060] | 6'-1" [1855] | 5'-3" [1600] | 4'-8" [1422] 5'-10" [1780] | 5'-3" [1600] | 4'-6" [1370] | 4'-0" [1220] | 7'-7" [2310] | 6'-10" [2080] | 5'-11" [1805] | 5'-3" [1600] #10 | 6'-7" [2005] | 5'-11" [1805] | 5'-1" [1550] | 4'-6" [1370] | 8'-7" [2615] | 7'-9" [2360] | 6'-8" [2030] | 5'-11" [1805] 1 | 7'-3" [2210] | 6'-6" [1980] | 5'-7" [1700] | 5'-0" [1525] | 9'-6" [2895] | 8'-6" [2590] | 7'-4" [2235] | 6'-6" [1980]



TENSION DEVELOPMENT & LAP/SPLICE: — REFER TO HOOKED TENSION DEVELOPMENT LENGTH SCHEDULE WHEN THE STRAIGHT TENSION DEVELOPMENT LENGTH CANNOT BE ACCOMMODATED. TABULATED DEVELOPMENT LENGTHS ARE BASED ON REINFORCING STEEL YIELD STRENGTH F_y =60 ksi AND NORMAL WEIGHT CONCRETE. LAP SPLICE LENGTHS ARE CLASS B, UNLESS NOTED OTHERWISE ON THE DRAWINGS. TOP BARS ARE DEFINED AS HORIZONTAL BARS WITH MORE THAN 12 INCHES OF FRESH CONCRETE CAST IN THE MEMBER BELOW THE BARS TO BE DEVELOPED OR SPLICED. THE TOP BAR FACTOR SHALL BE APPLIED TO HORIZONTAL BARS IN WALLS. WHEN BARS OF DIFFERENT SIZES ARE SLAP SPLICED IN TENSION, SPLICE LENGTH SHALL BE THE LARGER OF 'Id' OF THE LARGER BAR AND THE TENSION LAP SPLICE LENGTH OF THE ALL TABULATED VALUES ARE MINIMUM LENGTHS, IN CASE OF CONFLICT WITH PLANS, SECTIONS, OR DETAILS, USE THE LONGER LENGTH. 'd_b' = BAR DIAMETER 'ld' = DEVELOPMENT LENGTH ADJUST TABULATED LENGTHS BY THE FOLLOWING MULTIPLICATION FACTORS WHERE APPLICABLE. NOTE THAT FACTORS ARE CUMULATIVE: (IE 1.30x1.50 = 1.95) 3 OR LESS BUNDLED BARS: 4 OR MORE BUNDLED BARS: CLEAR SPACING LESS THAN 2da AND CLEAR COVER LESS THAN d_b CLASS A LAP SPLICE WELDED AND/OR MECHANICAL SPLICES MAY BE USED IF APPROVED BY THE STRUCTURAL ENGINEER OF RECORD PROVIDED THAT THE SPLICE IS CAPABLE OF DEVELOPING AT LEAST 125% OF THE YIELD STRENGTH OF THE LARGER BAR IN TENSION. WHERE WELDED AND/OR MECHANICAL SPLICES ARE TO BE USED, THE GENERAL CONTRACTOR SHALL SUBMIT FULL DATA ON THE PROPOSED MATERIAL, PROCEDURES, AND INSTALLATION INSTRUCTIONS TO THE ENGINEER FOR REVIEW AS A SHOP DRAWING SUBMISSION. USE MECHANICAL COUPLERS FOR #14 AND LARGER BARS.

Tension Lengths for hooked bars, unless noted otherwise, shall be as follows:

REINFORCING IN SHEAR WALLS, USE THE TABLE VALUES SHOWN x1.25

FOR LAP SPLICES IN CONCRETE MASONRY SEE MASONRY REL

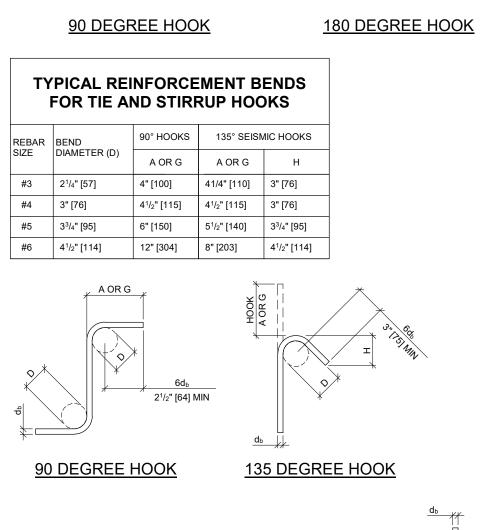
TENSION DEVELOPMENT LENGTHS FOR HOOKED BARS			FACE OF SUPPORT, - HORIZ OR VERT JOIN' OR POTENTIAL CRACI	
REBAR SIZE	4000 psi (25 MPa)	5000 psi (35 MPa)	ਰੀ	
#3	8" [204]	7" [180]	00 D	
#4	10" [255]	9" [230]	<u>90 Di</u>	EGREE HOOK
#5	12" [305]	11" [280]		
#6	1'-3" [380]	1'-1" [330]	FACE OF SUPPORT, -	
#7	1'-5" [430]	1'-3" [380]	HORIZ OR VERT JOINT OR POTENTIAL CRACI	
#8	1'-7" [480]	1'-5" [430]	-	LENGTH(Idh)
#9	1'-10" [560]	1'-8" [510]		
#10	2'-0" [610]	1'-10" [560]	ရ	
#11	2'-3" [685]	2'-0" [610]	<u>180 [</u>	DEGREE HOOK

FOR DEVELOPMENT LENGTHS AND TENSION SPLICES OF ZONE AND DISTRIBUTED VERTICLE

	701 5 2 7 2 2 0 1 1 1 2 1 1 1 0 1 1 1 0 1 1 2 D 1 1 1 0 1
1.	SEE TYPICAL REINFORCEMENT BEND DETAIL FOR ADDITIONAL INFORMATION.
2.	TABULATED DEVELOPMENT LENGTHS ARE BASED ON REINFORCING STEEL YIELD STRENGTH $\text{F}_{\text{y}}\text{=}60$ KSI AND NORMAL WEIGHT CONCRETE.
3.	ALL TABULATED VALUES ARE MINIMUM LENGTHS. IN CASE OF CONFLICT WITH THE PLANS SECTIONS OR DETAILS, USE THE LONGER LENGTH.
4.	'd _b ' = BAR DIAMETER
5.	'ldh' = DEVELOPMENT LENGTH FOR HOOKED BAR
6.	ADJUST TABULATED LENGTHS BY THE FOLLOWING MULTIPLICATION FACTORS WHERE APPLICABLE. NOTE THAT FACTORS ARE CUMULATIVE: (IE 1.33x1.20 = 1.60) a. REINFORCING BAR STRENGTH OTHER THAN 60 KSI: (F _y /60,000) b. LIGHT WEIGHT CONCRETE: 1.33 c. EPOXY COATED BARS: 1.50

22. Typical bends in reinforcement shall be as follows:

REBAR	BEND	90° HOOKS	180°	HOOKS	
SIZE	DIAMETER (D)	A OR G	A OR G	J	
#3	21/4" [57]	6" [150]	5" [125]	3" [75]	
#4	3" [75]	8" [200]	6" [150]	4" [100]	1
#5	33/4" [95]	10" [255]	7" [180]	5" [125]	1
#6	4 ¹ / ₂ " [115]	12" [305]	8" [200]	6" [150]	
#7	5 ¹ / ₄ " [135]	14" [355]	10" [255]	7" [180]	
#8	6" [150]	16" [405]	11" [280]	8" [200]	
#9	91/2" [240]	19" [480]	15" [380]	113/4" [300]	
#10	10 ³ / ₄ " [275]	22" [560]	17" [430]	13 ¹ / ₄ " [335]	
#11	12" [305]	24" [610]	19" [480]	143/4" [375]	
qp	*•		4dl 2 ¹ / ₂ " [64]		



REINFORCEMENT BENDS —

 $d_b = BAR DIAMETER$

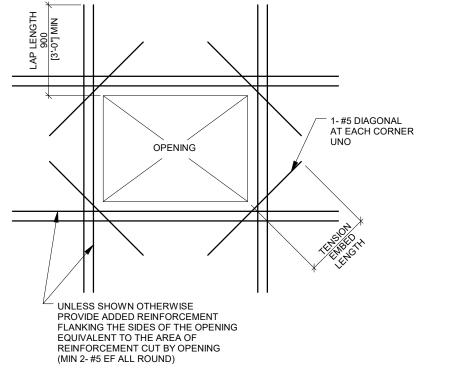
ALL BENDS SHALL BE MADE COLD AND SHALL BE

'D' = BEND DIAMETER, MEASURED ON THE INSIDE OF

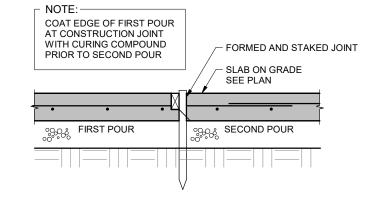
OFFSET BEND

MADE PRIOR TO PARTIAL EMBEDMENT IN CONCRETE.

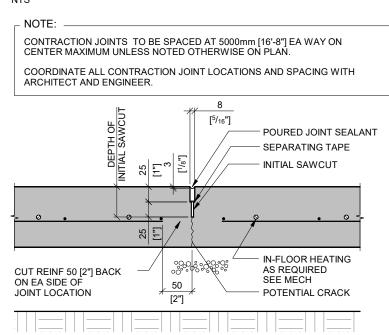
REINFORCING (Continued)



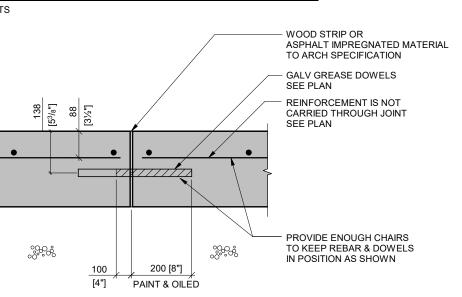
TYPICAL REINFORCING AROUND WALL AND SLAB OPENINGS



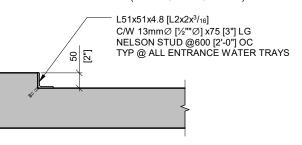
TYPICAL SOG CONSTRUCTION JOINT



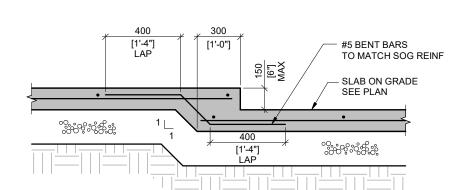
CONTRACTION JOINT IN SLAB-ON-GRADE

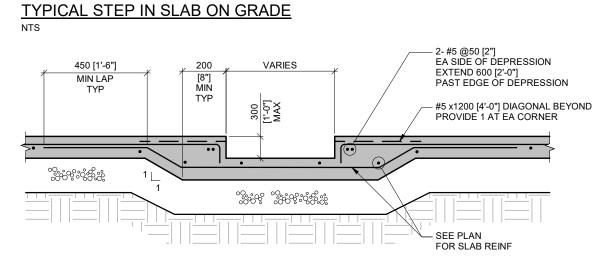


(AS INDICATED ON PLAN)

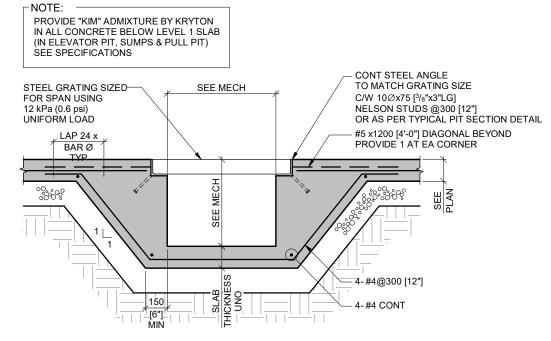


TYPICAL SLAB DEPRESSION

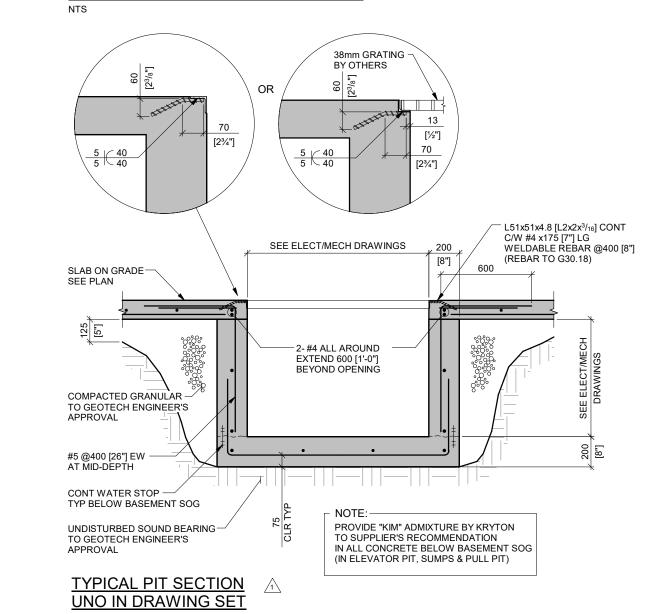




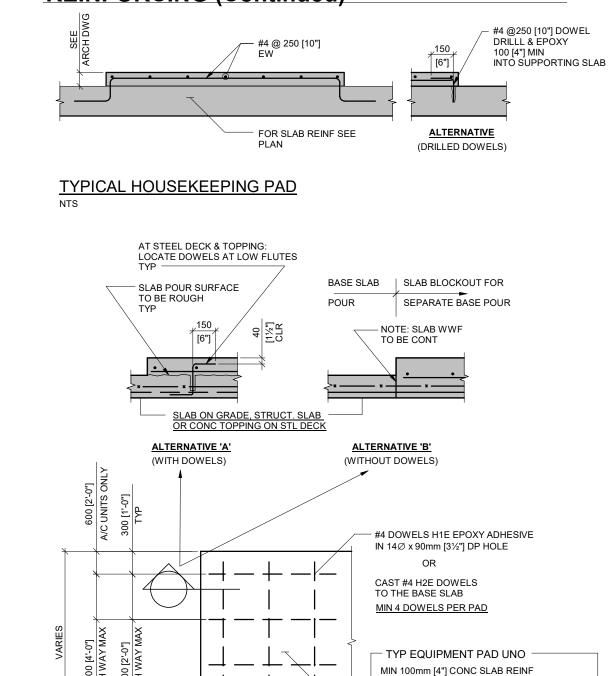
TYPICAL SLAB ON GRADE RECESS



TYPICAL TRENCH IN SLAB ON GRADE



REINFORCING (Continued)



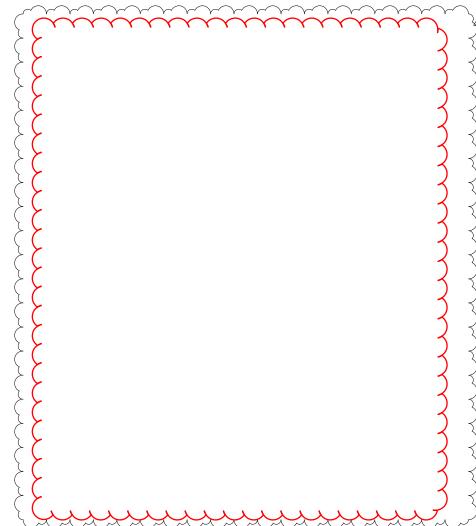
#4 @250 [10"] EACH WAY
MID-HEIGHT FOR SIZE AND LOCATION

DWG'S - DOWEL SPACING VARIES AS NOTED

SEE MECH AND ELECT

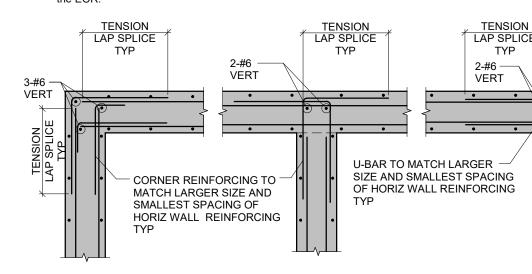
TYP EQUIPMENT PAD, DOWEL ARRANGEMENT UNO

PROVIDE ADDITIONAL CONC THICKNESS AND/OR STRUCTURAL FRAMING FOR EQUIPMENT SEISMIC ANCHORAGE IF REQUIRED.

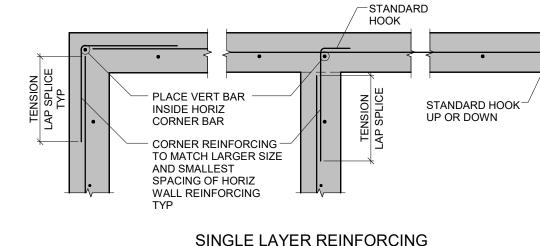


CONCRETE WALLS

- Refer to Architectural drawings for locations and dimensions of concrete upstand walls, planter walls, and curbs. Wall reinforcing shall be continuous unless noted otherwise. Use hooks or corner bars at all wall junctions and extend to far face of wall. Locate corner bars on outside face or center of wall, and embed vertical bars in main structure.
- Horizontal and vertical splices shall be Class B Case 1 tension splices. Horizontal bars do not need to be considered as top bars unless noted otherwise. Lap 2-#5 vertical as per Tension Lap Schedule at ends of walls unless noted otherwise. Provide 2-#5 parallel to all wall edges and extend beyond corners at openings in walls as per Tension Development Length Schedule. Provide dowels at bottoms of walls at footing or where wall begins and hook if necessary.
- Dowels shall match vertical steel reinforcing. Provide U-bars at locations where floors are supported from the bottom of walls unless noted otherwise.
- Retaining walls below grade and exterior walls exposed to weather above grade shall have control joints. Submit locations of control joints in exposed concrete to the Architect for review and approval. Construction joints may replace control joints where required. Tops of walls shall be placed 0" [0mm] to 1/2" [12mm] below soffit of supported concrete structure unless noted otherwise. Carefully chip down any tops of walls placed above soffit as required by



DOUBLE LAYER REINFORCING



SINGLE LAYER REINFORCING

─ WALL REINFORCING

SEE DETAILS FOR WALL REINFORCING NOT SHOWN

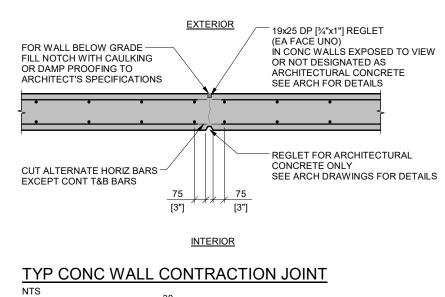
CUT 50% OF HORIZ STEEL -

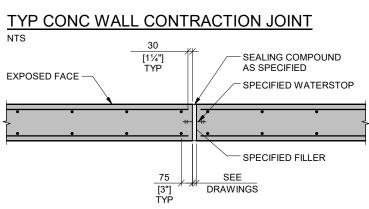
┌ NOTE: -----WALL CONSTRUCTION JOINTS TO BE AT 45m [147'-6"] MAX, UNO EXPANDING WATERSTOP SEALANT

<u>INTERIOR</u> TYP CONC WALL CONSTRUCTION JOINT

CONCRETE WALLS (Continued)

. UNLESS NOTED OTHERWISE FOR EXTERIOR WALLS BELOW GRADE AND EXTERIOR WALLS EXPOSED TO WEATHER ABOVE GRADE SPACE AT 45m [147'-6"] ON CENTER MAXIMUM UNLESS NOTED OTHERWISE ON PLAN AND TO CONSULTANTS' FINAL APPROVAL.



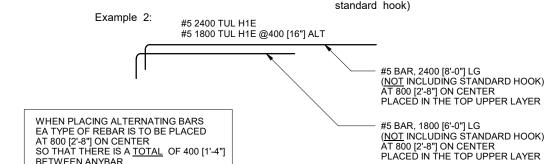


TYP CONC WALL EXPANSION JOINT

CONCRETE SLABS AND GRADE BEAMS

See also concrete and reinforcing notes.

- Embedded conduits, ducts, pipes and sleeves are subject to approval by the Engineer (submit layout to Engineer for review). The EOR shall review and approve locations and details of construction joints prior to construction. Minimum reinforcing: See minimum reinforcing in Concrete Reinforcing Section
- 2- #5 bottom continuous lapped 2 ft. [625mm] each edge of slab, extending 2 ft. [625mm] beyond corner at re-entrant corner. 2-#5 each side of openings, extending 2 ft. [625mm] beyond corners. Center slab and beam top reinforcement over supports, unless noted otherwise.
- Hooks shown are ACI 318-14 standard hooks. Reinforcement shown on plan thus: Top reinforcement Bottom reinforcement ___ __ __
- b. Reinforcement notation: 12- #7 16-0 means 12- #7 bars, 16'-0" long 2-C#5 2400 means 2- #5M bars, 2400mm long with 90 or 180 degree standard hook at one end (length does NOT include standard hook) Example 2:



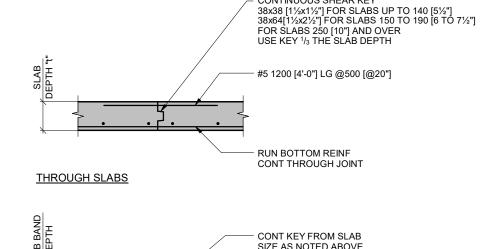
#7 BAR AT 800 [2'-8"] ON CENTER PLACED IN THE BOTTOM LOWER LAYER

otherwise. Hooks shown are ACI 318-14 standard hooks. Slab reinforcing shall not be cut at plumbing or other openings unless noted otherwise. Spread reinforcing around openings.

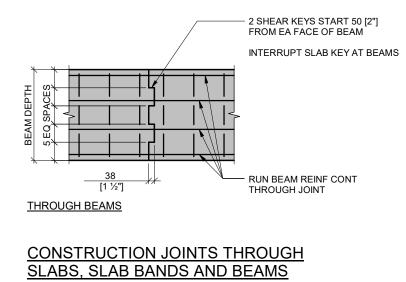
c. Center slab and beam top reinforcement over supports, unless noted

Splice slab temperature reinforcing with a Class B tension splice unless noted otherwise. See minimum reinforcing for slab temperature steel. Place temperature steel immediately above and transverse to slab bottom steel.





SIZE AS NOTED ABOVE TH 150 [6"] SHORTER THAN SLAB BAND ŴIĎTH RUN ALL SLAB BAND REINF THROUGH SLAB BANDS



CSG CONSULTANTS, INC.

THESE PLANS AND DETAILS ARE

THE APPROVAL OF THESE PLANS SHALL NOT BE CONSTRUED

BE A PERMIT FOR ANY VIOLATION OF ANY CODE OR ORDINANCE

THESE PLANS SHALL BE ON THE JOB FOR ALL REQUESTED INSPECTIONS

LOK C, PHIROZE W.,

Equilibrium Consulting

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REVISIONS

ISSUED FOR PERMIT 06/01/2020 1 PLAN CHECK **RESPONSE 1** 3 PLAN CHECK RESPONSE 3



GENERAL NOTES

CONDUITS, PIPES AND SLEEVES IN CONCRETE Except when approved by the EOR, pipes, conduits, and sleeves embedded in concrete shall be

- installed in accordance with ACI 318-14 and the following guidelines:
- Notwithstanding the satisfying of these guidelines, the conduit, sleeves, pipes, etc. shall not impair the structural strength and shall be moved if so directed by the EOR. b. Centreline spacing to be not less than 3 diameters, unless noted otherwise.
- Centreline spacing between parallel conduit and reinforcing bars to be 3 bar diameters
- d. Add reinforcing at points of congestion as directed by the EOR.
- For toppings on steel deck, the concrete thickness is measured from the top of
- No conduits, in-slab ducts, sleeves, etc., shall be placed near post-tensioning anchors.
- Metal conduit, pipes, etc., shall not be placed in parking slabs. No conduit, pipes, etc. shall be placed in parking topping.
- Conduits and pipes are not allowed in the concrete topping on top of steel deck unless approved by the EOR. For toppings on steel deck, the concrete thickness is measured from the top of the deck flute.
- For slabs conduits in the plane of the slab: Do not place conduits or ducts within 4'-0" [1200mm] of columns or walls. Clear horizontal distance between conduits must be no less than two times the larger
- Position conduit between top and bottom reinforcement with no more than two layers of conduits crossing. Add reinforcing or thicken slab at points of congestion as directed by

conduit diameter and minimum 2" [50mm]; maximum conduit size shall be

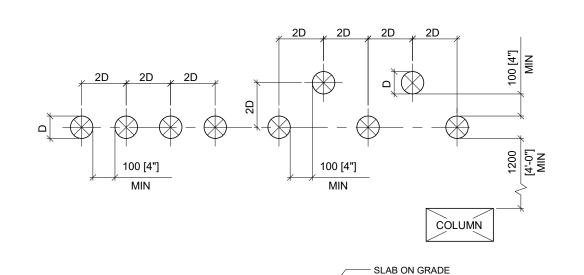
- the Engineer. In beams, maximum conduit size parallel to the span must not exceed 4%
- For columns boxes, conduit, sleeves or embedded pipes are not allowed without the written approval of the EOR.

of the cross section area of the member.

- For beams the total maximum size of horizontal conduit or pipes parallel to the beam not to
- exceed 4% of the area. No sleeves through any beams or slab bands unless approved in writing For shearwalls - boxes, conduit, sleeves or embedded pipes are not allowed without the written
- approval of the EOR. For non-shearwalls - boxes, conduit, sleeves, or embedded pipes:
- Maximum diameter = $\frac{1}{4}$ wall thickness.

otherwise on structural drawings.

- No horizontal runs permitted. Vertical runs to have minimum 2" [50mm] concrete cover and shall have a minimum clear spacing of 4 diameters.
- Guidelines for sleeves Sleeves in flat slabs and flat plates not to be located next to columns unless approved
- by the EOR in writing. Clear dimension for sleeves to column to be 50" [1200mm] minimum unless noted



— #4 @600 [2'-0"]

UNDER SLAB ON GRADE UNO

<u>YPICAL CONCRETE ENCASEMENT OF</u> LECTRICAL MAIN FEEDERS UNO

NON-STRUCTURAL CONCRETE TOPPING

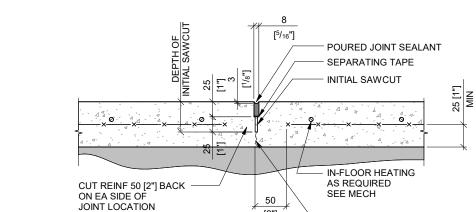
Refer to Architectural drawings and specifications for details including tolerances extent, thickness, joint fillers, slip sheets, control and expansion joints, and joint spacing and patterns. Mesh reinforcing to come in sheets (not rolls). Ensure mesh is properly chaired minimum

REINFORCING

or greate

- 1" [25mm] from underside of topping. Minimum reinforcing unless noted otherwise on Structural and Architectural drawings and specifications are as follows:
- THICKNESS (to be placed at mid-depth) 1 sheet of WWM 152x152 - MW18.7xMW18.7 lap 1ft, [300mm 1 sheet of WWM 152x152 - MW18.7xMW18.7 lap 1ft. [300mm] or 2 sheets of WWM 152x152 - MW18.7xMW18.7 lap 1ft. [300mm] 2 sheets of WWM 152x152 - MW18.7xMW18.7 lap 1ft. [300mm] or #4 @20" [500mm] each way at mid-depth of topping Temperature reinforcing each way
- 4. Maximum spacing of joints is 5000 mm (16'-8") in each direction. Provide tooled joints or sawcut and stop reinforcing as per typical detail. Sawcut no later than 24 hours within pouring. Stop reinforcing at saw cuts as per typical detail.
- Provide 1/2" [12mm] minimum gap at all edges around interior walls and columns to allow for expansion unless noted otherwise on Architectural drawings. Turn up polyethylene sheet against
- The Architect shall be responsible for conduction and scheduling of field review of non-structural concrete topping elements including reinforcing, joints, slip sheets, etc. Contractor to coordinate placement of concrete topping with acoustic mat supplier.

foundation wall at exterior perimeter wall to provide de-bonding.



CONTRACTION JOINT IN NON-STRUCTURAL CONCRETE TOPPING

POTENTIAL CRACK

Construction tolerances are as per ACI 301-10 except as noted below. Closer tolerances shall be maintained where specified in the construction documents or as required by equipment shop drawings or specifications. It shall remain the responsibility of the Contractor to confirm and meet

- Where any deviation occurs, and it is acceptable to the Engineer and Architect, the Contractor is responsible for the adjustment of other building elements to accommodate such deviation. Costs for remedial work for deviations not accepted shall be at the expense of the Contractor.
- Variation from the plumb: In the lines and surfaces of columns, piers, walls and arises Maximum 0.25% of height (1 in 400). ii. Maximum 1 9/16" [40mm] over the entire height of the structure.
- iii. Maximum of one curvature allowed per 10'-0" [3000mm] iv. All measurements shall be to the same side of the plumb line. Exposed corner columns, control joint grooves, and other conspicuous lines unless noted otherwise:
- Maximum 0.125% of height (1 in 800). ii. Maximum 3/4" [20mm]. iii. Maximum one curvature allowed per 20'-0" [6000mm]. Variation from the level or from the grades or cambers specified on drawings:
- Floor finishes, unless noted otherwise: Class A "Institutional and Commercial Floor" ii. ⁵/₁₆" [8mm] per 10'-0" [3000mm]. iii. Maximum one curvature per 10'-0" [3000mm] iv. Closer tolerances my be required to give the quality of finish floor surfaces called for elsewhere in the contract documents
- Location of columns and walls as per ACI 301-10. Variation in cross-sectional dimensions of columns and beams and in the thickness
- As per ACI 301-10. Maximum one curvature per 10'-0" [3000mm].
- Variation in dimensions in plan:

Reduction in thickness:

Minus - 5% of specified thickness

- i. Minus 3/8" [10mm] ii. Plus - 2" [50mm] Misplacement or eccentricity 2% percent of the footing width in the direction of misplacement but not more than 2" [50mm]
- Where any deviation occurs, and it is acceptable to the engineer and architect, the contractor is responsible for adjustment of other building elements to accommodate such deviation. Costs for remedial work for deviations not accepted shall be at the expense of the contractor.

CONCRETE ANCHORS (Post Installed)

- Unless noted otherwise, anchors shall be manufactured by Hilti (US) Ltd. and
- ANCHORAGE TO CONCRETE - Hilti HIT-RE 500 V3 safeset epoxy adhesive anchoring system for slow cure applications (ICC ESR-3814) Hilti HIT-HY 200 safeset adhesive anchoring system for fast cure applications (do no use in overhead applications) (ICC ESR-3187)
- Approved Anchor Rod: Hilti HIS-N internally threaded inserts - Hilti HIT Z rod - Hilti HAS-E continuously threaded rod Continuously deformed steel rebar
- Mechanical Anchors: - Hilti KWIK HUS EZ and Kwik HUS EZ-I screw anchors (ICC ESR-3027) - Hilti KWIK BOLT-TZ expansion anchors (ICC ESR-1917) - Hilti KWIK BOLT 3 expansion anchors (uncracked concrete only) (ICC ESR-2302) - Hilti HSL-3 expansion anchors (ICC ESR-1545)
- ANCHORAGE TO HOLLOW / MULTI-WYTHE/ SOLID GROUTED MASONRY Hilti HIT-HY 70 masonry adhesive anchoring system (ICC ESR-3342 and ICC ESR-2682) Approved Anchor Rod: - Hilti HAS-E continuously threaded rod
- Continuously deformed steel rebar For hollow masonry the appropriate size screen tube shall be used per adhesive manufacturer's Provide Stainless Steel anchors and hardware in all exterior applications.
- Design anchor capacity is based on guidelines published by Hilti and ICC reports. Alternative fastening systems shall be submitted to the EOR for review and approval.
- Anchors shall be installed as per the manufacturer's specifications: Provide standard depth of embedment as listed by Hilti, UNO
- Clean wedge anchor holes with a brush or high-pressure air blast. Clean adhesive (epoxy) anchor holes with high-pressure air blast followed by brushing. The Contractor's personnel must be trained on-site by a Hilti representative for all specified Hilti products prior to installation of anchors. It shall remain the responsibility of the Contractor to retain a Hilti representative to provide both this training as well as ongoing on-site quality control
- representative shall submit quality assurance reports to the EOR following each site visit. Anchors shall be installed in accordance to spacing and edge distances specified on
- Structural drawings in order to ensure anchors capacities are not exceeded. The Contractor shall use a template to locate anchors holes where anchors are to be attached to

Unless noted on the drawings that bars can be cut, the contractor shall review the existing

structural drawings and shall undertake to locate the position of reinforcing bars at the locations of

required to avoid cutting reinforcement unless noted otherwise. Proposed anchor layout shall be

reviews to ensure that anchors are installed as per Hilti (US) Ltd.'s specifications. The Hilti

- the concrete anchors, by scan, CPR, x-ray, chipping (if approved by the EOR) or other nondestructive means. Where concrete anchors and existing reinforcement interfere, adjust proposed anchor locations as
- submitted to the EOR prior to installation for review and approval. Except for column base plate holes which are slightly oversized to follow standard practice holes shall not be oversized in steel material to fit anchor locations.

ARCHITECTURALLY EXPOSED

Butt and plug welds:

STRUCTURAL STEEL Refer to Architectural and Structural drawings and specifications in addition to the

- requirements specified below Fabrication shall be handled with special care and necessary straightening to maintain the condition of the material.
- Shop drawings shall clearly detail the required fabrication tolerances. Erection plans and/or anchor bolt plans shall show the required tolerances for setting embedded items. Copes, mitres and butt cuts in exposed surfaces shall be made with uniform gaps of 1/8" [3mm] if shown on Architectural drawings as open joints, or in uniform contact if shown on drawings without a gap.
- Finishing or grinding of exposed weld faces is not required except where noted on drawings or where clearances or fit of other items is necessary. Weld faces shall be reasonably smooth and uniform and shall have as-welded surfaces.
 - Finishing or grinding of exposed butt and plug weld faces is not required except where noted on drawings or where clearances or fit of other items is necessary Butt and plug weld faces shall be reasonably smooth and uniform with as-Welded surfaces, and shall not project more than 1/16" [1.5mm] above the surfaces joined
 - See Architectural and Structural drawings and specifications. Do not paint surfaces within 2" [50mm] of any field weld location. Keep this area clear of materials that might prevent proper welding or produce objectionable fumes while welding. If shop painted, wire brush in the field all surfaces to be welded.
- The erector shall use special care in unloading, handling, and erecting the steel to avoid bending, twisting, damage to shop coat of paint, or otherwise distorting the steel members. The erector shall ensure that the close fit and neat appearance of the joints and structure as a whole is not impaired during erection.
 - Use special care when removing temporary braces or erection clips to avoid damage to the structure's appearance. Ground smooth tack welds and fill holes with weld metal or body solder smoothed by grinding or filing. Paint all areas scratched, marred, or left unpainted for erection purposes.

STRUCTURAL STEEL/METALS

- Structural Steel work shall conform to "Specification for Structural Steel Buildings" (AISC 360-16), "Code of Standard Practice for Steel Buildings and Bridges" (AISC 303-16), "Seismic Provisions for Structural Steel Buildings, Dated 2016" (AISC 341-16), and "Structural Welding Code - Steel" (AWS
- Structural Steel shall be detailed in accordance with "Detailing for Steel Construction 2nd Edition (2002)" and, where required, designed in accordance with referenced standards. All structural steel material shall conform to the following
- ASTM A992 or A588 Grade 50 (Fy=50 ksi) Unless otherwise noted Angles, channels, plates, - ASTM A36 (Fy=36 ksi), UNO base plates, and bars ASTM A500 Grade B, Fy=46 ksi Square/Rectangular HSS ASTM A500 Grade B, Fy=42 ksi Round HSS ASTM A53 Grade B, Fy=35 ksi Anchor rods (cast-in-place) - ASTM F1554 UNO Fy=105 ksi
- Deformed bar anchors -CSA G30.18 grade 400W ASTM A325, UNO Misc hardware Submit PDF shop drawings to the EOR prior to fabrication. Fabrication is not allowed until the shop drawings have been approved, in writing, by the EOR.
- Shop drawings shall indicate material specifications, finishes, connections, components embeds, details, and include an erection layout/plan for all structural steel members. The Contractor shall notify the EOR in writing, prior to the submission of shop drawings, that the
- fabricator is certified to a minimum of AWS Standard. The Contractor shall not alter connection details shown on the Structural drawings or shop drawings without written approval from the EOR.
- Splices and connections not shown on structural drawings and requested by the fabricator must receive written approval from the EOR. Testing of connection and splices is subject to the discretion of the EOR at the expense of the Contractor.
- Camber shall be by cold-formed process in conformance with AISC specifications and tolerance. All beam connections shall be standard frame beam connections or equivalent, unless noted otherwise.
- Beam and girder connections to embedded plates shall be double angle framing connections unless noted otherwise.
- Bolted connections shall consist of minimum 2-19 mm Ø (2-3/4"Ø) A325 bolts with a 9.5 mm (3/8") connector plate unless noted otherwise Where moment connections are designated on plan provide full strength moment connection
- unless noted otherwise. Provide full height and full width 10mm (3/8") stiffener plates each side of beam where beams are continuous over columns and where columns are supported on a steel beam, unless noted otherwise. Refer to AISC 341-16 for general seismic requirements for:
 - -Section D2.1 Connection design for connection forces not shown on drawings Steel in the energy dissipation system Section D1.1 Welds and weld material -Section D2.3 Bolted connections
- Install all welded headed studs and welded deformed bar anchors according to manufacturer's specifications or shop fillet weld. Field fillet welded headed studs and deformed bar anchors will be rejected. Nelson studs at composite beams and where noted on drawings shall be shop welded unless otherwise approved in writing by the Structural Engineer.
- The Contractor shall be responsible for coordinating the design, supply and installation of all studs and anchors. Refer to Structural drawings for locations and details of welded studs and anchors. Refer to Shear Connector notes for stud shear connections of all composite beams.
- Select nelson studs welded in the shop or field shall be tested by bending in accordance to W59 requirements. The contractor shall send bend test results to the Engineer of Record Welding of reinforcing to embedded plates is permitted only with weldable deformed bar anchors with the follow fillet weld sizes: BAR Ø WFLD SIZE
- 1/4" (6mm) #5 (5/8") 1/2" (12 mm) 19. Provide 5/8" (16 mm) column cap plates and 3/4" (20 mm) column base plates unless noted otherwise.
- Provide 1/4" (6 mm) cap plate for HSS members unless noted otherwise. Apply one shop coat of primer to all steel work per the specifications unless noted otherwise or except
- in the following conditions: Surfaces to be embedded in concrete or mortar Surfaces to be field welded
- Surfaces of high-strength bolted, slip-critical connections Galvanized surfaces

STRUCTURAL STEEL WELDING

- All welding shall conform to AWS D1.4/D1.4m and to be performed by certified AWS welders, fabricators to AWS approval. Welded connections shall be made by approved certified welders using filler metal conforming to E70XX or F7X-EXXX with low hydrogen. Nelson Stud welding shall meet specifications of
- The contract shall submit steel fabrication and erection documents for review by the EOR in
- accordance with AISC 360-16 and AISC 341-16.
- Structural steel shop drawings shall show all welding with AWS A2.4 weld symbols. Welds designated as "Demand Critical Welds" (DCW) in the contract documents require higher
- standards for welding, testing and inspection per AISC 341-16. 6. The contractor is responsible for, but not limited to: Joint preparations and welding procedures including, but not limited to: welding procedures
- required root openings, root face dimensions, groove angles, backing bars, copes, surface oughness values, and welding tapers of unequal parts. Sequencing and procedures of welding to minimize the effect of shrinkage, residual stresses, and to maintain erection tolerances.
- Project-specific welding procedure specifications (WPS) for all specified field and shop welds shall be submitted for review and acceptance prior to starting fabrication or erection. These shall be submitted to the Owner's testing agency for review and acceptance prior to being submitted to the EOR. Fillet welds shown on the drawings are minimum sizes. Increase weld size to AWS minimum based on
- plate thicknesses or 1/4". Fillet welds shall not be less than 1/4" (6mm).

11. It is the contractor's option whether a weld is made in the shop or in the field unless specifically noted in

Fillet weld lengths shown on the drawings are the net required effective length. Fillet welds shown without a length designation shall be the full joint length. All groove and butt welds shall be complete joint penetration (CJP) welds, UNO. All partial penetration groove weld sizes shown on the drawings refer to effective throat thickness.

GLUE-LAMINATED TIMBER:

- **GLULAM (GL)**
- 1. All work to NDS 2015 and referenced documents. 2. Glulam members shall be as follows (or written approval by EOR): Bending Members, Single Span Bending Members, Multi Span 24f-V8 DF/DF
- Compression Members L2D DF/DF All glulam members shall be with quality appearance grade and 12% (±2%) moisture content. All wood to be FSC certified.
- 4. Glulam manufacturer must qualify under ANSI / AITC 117. Bonding adhesive to be polyurethane resin (white) meeting the requirements of ANSI / AITC A190.1. DIN 68 141 and EN 301 and 302, unless otherwise approved in writing.
- Submit PDF shop drawings showing all applicable details and material specifications to the Engineer for review prior to fabrication. Shop drawings shall be accompanied by a certificate of conformance to
- 7. Affix authorized label to all members supplied. Also identify each member with mark number. Store glulam off the ground with spacer blocks placed between members. Keep wrapping on the members until permanent protection from the weather is in place but cut holes on underside of wrapping to prevent the accumulation of condensation
- All pressure treated glulam to be treated according to AWPA Book of Standards. All cutting and drilling to be completed before the treatment. Field apply preservative to equivalent standard, to all areas cut or
- All structural steel connecting glulam elements to each other and to supporting members shall be detailed, supplied and test fitted in the shop by the glulam supplier.

11. In transition area between wood elements and concrete or masonry, wood elements to be protected

foam gasket material, type S roll roofing, or 0.002" polyethylene as a moisture barrier. 12. Shop applied finish - Apply sealer to all sides of glue laminated members. Double coat ends of and penetrations through laminated members. Sansin KP-12 UVW.

from ascending moisture. Provide light-gauge metal, asphalt-impregnated building paper, closed-cell

14. All corners to have 1/8" radius - No chamfers.

13. Re-tighten all accessible bolts at end of project.

CROSS-LAMINATED TIMBER (CLT)

- Refer to Specifications for CLT requirements. All CLT panels to be Grade V2M1.1 or V2M2.1 minimum with the exception of the bottom exposed lamination, Which is to be 1650f-1.5E Douglas Fir-Larch MSR Lumber Bottom exposed lamination to match glulam specie and grade.
- All wood to be FSC certified and 12% (+/- 2%) moisture content. Supplier to submit adequate product certificates to Architect and EOR prior to commencement of
- fabrication. Fabrication shall start only after review of documents and written approval by the EOR. Confirm all dimensions, outlines, elevations, and details with Architectural drawings.
- CLT panels consist of crosswise stacked and glued together layers or written approval by EOR. Bonding to be carried out exclusively with approved adhesives. Planks to be stress and quality graded and machine dried. See note 2. for CLT species and grade. Panel surfaces to be Architectural Appearance Grade (equivalent to European DVQ surface quality).
- Single Species wood. Blue stain and heart stain: Maximum 3%. Loose knot holes < 1/2" permitted. Pitch streaks and wane on face not permitted. Shake and checks < 24" permitted, none through. Pith length (to be defined)
- Surface re-treatment (patching, epoxy filling) permitted. Keep the panels constantly protected from the weather during transportation, storage and erection. Store CLT panels off the ground with spacer blocks placed between members. Anchor points for installation straps to have min 31/2" [89mm] edge / end distance
- Unless noted otherwise, all structural steel connecting CLT panels elements to each other and to supporting members shall be detailed, supplied and test fitted in the shop by the CLT supplier. 10. Unless noted otherwise, use 5/16" [8.0mm] self tapping screws to connect panels. 3" [76mm] min length of penetration into connected member. See typical details for further information.
- 11. Unless noted otherwise, use Simpson connectors or equivalent where required. All nail holes in connectors, including straps, to be filled with \(^{1}/_{4}\infty x23\)/₈" [6\(\infty x60\)mm] Gunnebo nails (annular ringed nails) or equivalent. Substitutions must have written approval from the EOR prior to installation. See typical details for further information.
- 12. Steel hardware shall be ASTM A36 or better and bolts shall be A307, hot dipped galvanized. All bolts and lag bolts bearing against timber shall have standard "CUT" (oversized) washers unless noted
- 13. At joint locations between wall to floor/roof panels as well as floor/roof to floor/roof panels, use joint sealant for improved noise performance. See architectural drawings for details.
- 14. Re-tighten all accessible bolts at end of project. 15. Finishes shall be detailed to accommodate shrinkage/movement of CLT panels.
- Non-load bearing elements to be detailed to accommodate movement / deflection as outlined under Secondary Components and their Attachments'
- 17. Confirm service channels incorporated in CLT panels with Architectural, Electrical and Mechanical drawings. All cuts and drills to be shown on shop drawings and to be approved by the EOR prior to 18. Submit PDF shop drawings showing all applicable details and material specifications to the EOR for
- 19. Affix authorized label to all members supplied. Also identify each member with mark number. Shop drawings of members, connections and components to be submitted with a statement of product
- compliance with drawing specifications and standards. 21. Any changes to the framing shown on these drawings shall have prior written approval of the EOR. 22. The EOR must complete framing review before finishes can be applied to wood framing.
- equirements. See architect drawings for details. In transition area between wood elements and concrete or masonry, wood elements to be protected from ascending moisture. Provide light-gauge metal, asphalt-impregnated building paper, closed-cell foam gasket material, type S roll roofing, or 0.004" polyethylene as a moisture barrier. See typical

All exposed CLT connections supporting, or within fire rated assemblies to meet FRR

- 25. All penetrations through CLT walls and floors panels should be avoided except what is explicitly shown on mechanical, architectural, or structural drawings. Some exceptions may be made by the EOR upon coordination. All penetrations to be reviewed by structural. Coordinate all penetrations with CLT
- 26. Provide shop applied finish CLT. Apply sealer to all sides of CLT members. Double coat panel edges and penetrations. Finish to be Sansin KP-12UVW 27. Temporary shoring of CLT panels is required at the following locations:
- CLT panels supported by steel overframing beams. CLT panels with a specified pre-camber Any CLT panel where the construction loads exceed the design live loads as shown on S010. All temporary shoring must remain in place until the concrete topping has attained 90% of its design strength and all steel overframing connections are fully installed. The contractor is responsible for retaining a shoring engineer registered in the State of California to evaluate and design the temporary shoring. The final shoring design shall be signed and sealed by the shoring engineering and submitted

MANUFACTURER

to the EOR for review prior to installation.

- GLUED-IN RODS 1. Pre-drill holes for the rods 2 to 3mm larger than the diameter of the rods, or as per specified by the
- epoxy manufacture. Clean all holes thoroughly with air pressure nozzle. Unless specified otherwise by epoxy manufacturer, the epoxy shall be installed in a dry controlled environment with an ambient temperature between 15°C and 35°C
- The moisture content of timber at the connection location to be between 8% and 15%. Prior to installation of glued in rod, inspection shall be carried to ensure no cracks or checks are present at the location of the rod hole.
- Calculate required volume of glue per hole. Inject the calculated volume of glue. Do not use more than the calculated volume. Insert the threaded rod with a continuous clockwise or counter-clockwise twisting motion to fully coat the bars and minimize the amount of entrapped air inside the adhesive. Inspect that a small amount of adhesive is coming out of the hole. The opposite would indicate that the
- Allow the glue to cure and do not load the rods for a minimum of 48 hours at an ambient Glued in rod installer shall perform a preload tension test on all connections subjected to tension loads. The pre-loading shall correspond to 50% of the design tension load for each connection.
- 10. Unless noted otherwise, minimum threaded rod embedment to be the greater of 20 times the threaded rod diameter or 400mm for rods perpendicular to grain and 30 times the rod diameter or 600mm for rods installed parallel to grain.
- 11. Unless noted otherwise on plan, steel grade for threaded rod to meet requirements of ASTM F1554 Grades 36 and be hot dip galvanized. 12. The following epoxy glues are acceptable, unless specified otherwise on structural drawings:

14. Contractor to prepare quality control plan and submit to EOR for review, prior to installation.

Anchor Fix 3001 Sika Canada Inc. System Three System Three Gel Magic 13. Epoxy glue to be installed with a hand actuated application gun.

Air pressure application guns are not acceptable.

glue is running out of the hole through a crack/check.

TIMBER FASTENERS

- All fasteners to be clearly identified on shop drawings.

provided the rod is threaded at the ends only.

- Refer also to wood frame general notes where applicable See manufacture's specifications for all installation details unless noted otherwise.
- Prior to fabrication, fabricator to submit samples to engineer & architect for approval prior to mass
- All chamfers to be accurately machined, any irregularity will be rejected All pins (including tight fit pins) to be stainless steel unless noted otherwise on structural drawings.
- Holes in timber not be less than 1.0mm [3/64"] and not more than 2.0mm [3/32"] than the bolt diameter as per NDS (latest edition).
- Unless noted otherwise, steel grade of bolts to be ASTM A 307, SAE J429 Grade 2 or other In accordance with the wood design manual, threaded rods may be used in lieu of bolts,
- Standard cut washer or metal plates or metal strap of equal or greater dimensions shall be provided between the wood and the bolt head and between the wood and the nut, as per NDS (latest
- **TIGHT FIT PINS**
- Hole diameter in wood to be 0mm to 1.0mm [3/64"] smaller than pin diameter.
- Hole in steel to be max 1.0mm [3/64"] larger than pin diameter UNO. For multiple pin connections, holes in timber to be drilled using equipment capable of achieving required tolerances or using actual steel
- Holes in wood are to be square and aligned. Use plywood template when installing pins/bolt to avoid splintering of wood opposite to driving direction.

16. The following self tapping screws are acceptable, unless specified on the structural drawings:

PARTIALLY THREADED SELF TAPPING SCREWS					
	NOTATION	MANUFACTURER	FASTENER TYPE		
	PT/CS	SWG	ASSY 3.0 Eco		
	PT/HX	SWG	ASSY Kombi		
	PT/WH	SWG	ASSY SK		

NOTES: 1. Simpson SDS screws are only acceptable where specifically indicated on structural drawings.

FULLY THREADED SELF TAPPING SCREWS MANUFACTURER FASTENER TYPE NOTATION

ASSY VG CYL

NOTE: Refer to ICC Report ESR-3178 15. Self tapping screw notation:

SELF TAPPING SCREWS

1/4Øx3"[2"] PT/WH SCREW means: 1/4"Ø, 3" long partially threaded screw

2. Refer to ICC Report ESR-3179

- with a minimum thread length of 2" 5/16Øx11" FT/CS SCREW means: 5/16"∅, 11" long *fully threaded* screw
- with a countersunk head See the tables above for head type notations.

with a washer head

- 16. Screw types specified on structural drawings supersede the information above unless noted otherwise. Where partially threaded and/or fully threaded self tapping screws are used in combination with architecturally exposed steel plates, use screws with tapered screw head unless noted otherwise. Countersink holes in steel to receive tapered screw heads. Do not oversize holes. Contractor to submit
- sample of steel plate including screw used in assembly to Equilibrium Consulting for approval prior to mass fabrication Where partially threaded and/or fully threaded self tapping screws are used in combination with steel plates not exposed to view, use screws with a hex head to allow for easier and safer installation, unless noted otherwise. Holes in steel plate to match the screw type used. Contractor to submit sample of

steel plate including screw used in assembly to Equilibrium Consulting for approval prior to mass

- Where pre-drilling of screws is recommended by the supplier, hole diameter to be strictly as per manufacturer's recommendations
- 20. Where 45° washers are specified refer to manufacturer's specifications. OTHER SPECIALIZED CONNECTORS
 - The following *Pre-Engineered Aluminum Hangers* are acceptable, unless specified on
- MANUFACTURER FASTENER TYPE KNAPP RICCON
- The installation of hanger and screw type to be strictly as per manufacturer's specifications. Refer to European Technical Assessment ETA-15/0667 Connection system using HSK - Technology. Contact:
- TiCom Tec GmbH, Goethestrasse 60, 63808 Haibach, Germany Tel: +49 (0) 6021 / 446 426 7 Fax: +49 (0) 6021 / 446 426 8
- E-Mail: info@hbv-systeme.de Web: www.hbv-systeme.de Contractor is responsible to coordinate required injection and ventilation holes to allow for injection of adhesive. The installation of system to be as per manufacturer's specifications. Contractor to submit proposed installation procedure in writing to the Engineer for review and approval prior to beginning of

installation. Refer to DIBt 2-9.1-770 German National Technical Approval.

- For bearing strips use MAGEBA WL6R 5" wide LASTO-Wall bearing, or pre-approved equal, where indicated on structural drawings Contact information for supplier below
- North Vancouver, BC Email: vsciamanna@mageba.ch

1. TIGHT FIT PINS TO BE STAINLESS STEEL S304.

Mageba Products

NOTES - GENERAL:

5612 Grousewoods Place

2. THROUGH BOLTS TO BE A307, GALVANIZED. 3. DIAMETER 'd' OF PINS/BOLTS AS PER PLAN/SECTION: 12mmØ [½"Ø] 16mmØ [5/8"Ø] 9mmØ [¾"Ø] 25mmØ [1"Ø] (0.5mm ALL AROUND)

%"Ø. 34"Ø OR 1" TAKE SPECIAL CARE-TO KEEP WOOD FIBRE SEE SECTIONS FROM SPLINTERING DIRECTION OF DRIVING AS PIN REACHES USE PLYWOOD TEMPLATE ---3.2mm [1/8"] CHAMFER AS REQUIRED ALL AROUND

TIGHT FIT PIN THROUGH BOLT

— FACE OF TIMBER

3.2mm [1/8"] TYP UNO

TIGHT FIT PINS (STAINLESS)

THROUGH BOLTS (GALV) TIGHT FIT BOLTS (GALV)

TIGHT FIT BOLT

THROUGH BOLT:

- NOTES - FABRICATION: -

HIDDEN PLUNGE CUT

1. FABRICATOR TO SUBMIT SAMPLES TO ENGINEER & ARCHITECT FOR APPROVAL PRIOR TO MASS 2. ALL CHAMFERS TO BE ACCURATELY MACHINED, ANY IRREGULARITY WILL BE REJECTED. TIGHT FIT PIN/BOI T: 1. HOLE DIAMETER IN TIMBER TO BE 0mm TO 1.0mm SMALLER THAN PIN DIAMETER.

1. HOLE DIAMETER IN TIMBER TO BE MAX 3mm (CSA-086) BIGGER THAN BOLT DIAMETER.

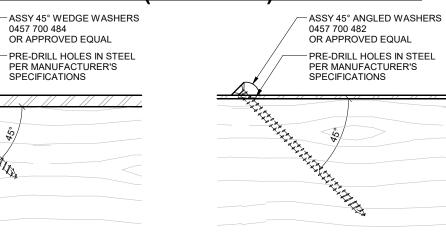
2. HOLE IN STEEL TO BE MAX 1.0mm LARGER THAN PIN DIAMETER UNO. FOR MULTIPLE PIN CONNECTIONS, HOLES IN TIMBER TO BE DRILLED USING EQUIPMENT CAPABLE OF ACHIEVING REQUIRED TOLERANCES OR USING ACTUAL STEEL PLATE AS A DRILLING TEMPLATE. 3. HOLES ARE TO BE SQUARE AND ALIGNED. 4. USE PLYWOOD TEMPLATE WHEN INSTALLING PINS/BOLT TO AVOID SPLINTERING OF WOOD OPPOSITE TO

2. IN ACCORDANCE WITH THE WOOD DESIGN MANUAL, THREADED RODS MAY BE USED IN LIEU OF BOLTS,

STEEL PARTS FOR WOOD CONSTRUCTION

PROVIDED THE ROD IS THREADED AT THE ENDS ONLY.

TIMBER FASTENERS (Continued)





SHEAR CONNECTORS -**COMPOSITE WOOD BEAMS AND PANELS**

- Beams and panels denoted on the drawings as wood-concrete-composite shall require the glued-in HBV-shear connector system supplied by:
- TiComTec GmbH Goethestrasse 60 63808 Haibach Germany
- Tel.: +49 (0)6021 / 446 426 7 Fax: +49 (0)6021 / 446 426 8 E-Mail: info@hbv-svsteme.de Web: www.hbv-svsteme.de
- The Contractor shall be responsible for the coordination of the supply and installation of the system. Follow manufacturer's specifications for handling, storage and installation of connection system. See Glued Laminated Timber (GL), Cross-Laminated Timber (CLT) and Structural Composite Lumber
- general notes for other requirements where applicable, unless noted otherwise on Structural drawings. See concrete general notes for concrete topping requirements, unless noted otherwise on Structural drawings.
- Architectural drawings:1 sheet of WWM 6"x6" 4/4 (152x152 MW25.8xMW25.8) lap 1'-0" (300 mm). Reinforcing to be placed on top of HBV shear connector system. Where specified on the structural drawings, rigid insulation to be Green Guard Type IV 25 psi insulation boards or pre-approved equal, unless noted otherwise on the structural drawings.

All beams to have one continuous row of HBV mesh projecting 15/8" (40mm) minimum into beam

and 2" (50mm) minimum into concrete topping along centerline of beam, unless noted otherwise on

Minimum reinforcing in concrete topping, unless noted otherwise on Structural and

- Structural drawings. All panels to have one continuous row of HBV mesh projecting 15/8" (40mm) minimum into beam and 2" (50mm) minimum into concrete topping at 2'-0" (600mm) O.C., unless noted otherwise on Structural
- All beams and panels to be pre-shored at mid span before pouring concrete topping, unless noted otherwise on Structural drawings.

SECONDARY COMPONENTS

- Secondary components include but are not limited to the following: Architectural components, including embeds, such as guard and hand rails, canopies, Site work elements exterior to the base building such as landscaping components, signs, and Cladding, window mullions, glazing and store fronts. Skylights and glass canopies. Attachments and bracing for electrical and mechanical components. Elevators and elevator support frame.
- Window washing equipment and its attachments. Interior and exterior light gauge steel stud walls. Roofing and waterproofing material. Design and detailing of the above items and their attachments are not the responsibility of the EOR. They shall be designed by SSEs retained by the Contractor, see DELEGATED ENGINEERING for engineering and approval requirements. Contractor to obtain design before completing the structural

portions of the building that will receive these secondary components

Sealed shop drawings of the secondary or non-structural components shall be submitted to the Engineer for review of their effect on the primary structural system. Clearly indicate the method and means of attachment and the magnitude of forces that the structure must withstand. Review by the Engineer of Record may result in the need to modify the means of connection. Sub-contractor of these

Secondary or non-structural components and their attachments shall be designed in accordance with

± 2" (50mm)

± 2" (50mm) ± 1" (25mm)

reference standards and governing codes, including seismic design where required per code.

components is responsible for protection of aluminum-steel connections against galvanic corrosion. Review by the EOR does not relieve the SSE from the responsibility for that design. In addition to construction tolerance, non-structural components shall be detailed for the following building movement and deflection:

Movement at expansion joints:

Perpendicular:

Parallel: Vertical:

Vertical deflections of beams, slabs and decking: ± 1" (25mm) Differential deflections of edge beams and edges of slabs: ± 5/8" (16mm) Horizontal drift during wind and earthquake between floors: Drift without damage to non-structural components: ± 0.5% x story height Drift without collapse of non-structural components: ± 2.0% x story height

BUCKLING-RESTRAINED BRACES (BRB) Buckling-restrained braces (BRB) shall be manufactured by CoreBrace, or approved equal.

and brace schedule to the EOR for approval.

Where a pinned connection is not specified, a bolted connection can be used. If bolted brace connections are used, the Contractor shall submit design and detailing of the proposed end connections (sealed by a Professional Engineer registered in California) to the EOR for approval.

The BRB manufacturer shall submit testing reports, quality control plan, manufacturer's qualifications

and certification, brace structural design, shop drawings, material certifications, welder certifications,

CSG CONSULTANTS, INC. THESE PLANS AND DETAILS ARE LOK C, PHIROZE W.,

THESE PLANS SHALL BE ON THE JOB FOR ALL REQUESTED INSPECTIONS

Equilibrium Consulting Inc Structural Engineers

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REVISIONS ISSUED FOR PERMIT 06/01/2020

1 PLAN CHECK

RESPONSE 1

2 PLAN CHECK

RESPONSE 2

CHECKED BY: 9 MAR 2020 ISSUE DATE: PROJECT NO:

SCHEDULE OF SPECIAL INSPECTIONS

DEFINITIONS AND ABBREVIATIONS - GENERAL

STATEMENT OF SPECIAL INSPECTIONS	
THIS STATEMENT OF SPECIAL INSPECTIONS IS SUBMITTED IN ACCORDANCE WITH SECTIONS. IT INCLUDES A SCHEDULE OF SPECIAL INSPECTION SERVICES APPLICABLE TO TALE A SPECIAL INSPECTOR QUALIFIED IN ACCORDANCE WITH SECTION 1704.2.1 AND CERTIFIED SPECIAL INSPECTOR IS TO BE DESIGNATED BY THE ARCHITECT AND RETAINED BY SHALL REFERENCE THESE PLANS AND CHAPTER 17 FOR ALL SPECIAL INSPECTION RECORDS.	HIS PROJECT, WHICH ARE TO BE PERFORMED EFIED BY THE AUTHORITY HAVING JURISDICTION. THE BUILDING OWNER. SPECIAL INSPECTORS
SPECIAL INSPECTIONS FOR WIND RESISTANCE	REQUIRED
MAIN WIND FORCE-RESISTING SYSTEM	STEEL BUCKLING-RESTRAINED BRACED FRAM

MAIN WIND FORCE-RESISTING SYSTEM	STEEL BUCKLING-RESTRAINED BRACED FRAMES		
SPECIAL INSPECTIONS FOR SEISMIC RESISTANCE	REQUIRED		
SEISMIC FORCE-RESISTING SYSTEM	STEEL BUCKLING-RESTRAINED BRACED FRAMES		
THE SPECIAL INSPECTOR(S) SHALL KEEP RECORDS OF ALL INSPECTIONS AND SHALL FURNISH INTERIM INSPECTION REPORTS TO THE			

IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THE DISCREPANCIES ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE PRIOR TO THE COMPLETION OF THAT PHASE OF WORK. A FINAL REPORT OF SPECIAL INSPECTIONS DOCUMENTING REQUIRED SPECIAL INSPECTIONS AND CORRECTIONS OF ANY DISCREPANCIES NOTED IN THE INSPECTIONS SHALL BE SUBMITTED TO THE BUILDING OFFICIAL AND THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AT THE CONCLUSION OF THE PROJECT. FREQUENCY OF INTERIM REPORT SUBMITTALS

BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE AT A FREQUENCY AGREED UPON BY THE DESIGN PROFESSIONAL AND THE BUILDING OFFICIAL PRIOR TO THE START OF WORK. DISCREPANCIES SHALL BE BROUGHT TO THE

THE SPECIAL INSPECTION PROGRAM DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY TO COMPLY WITH THE CONTRACT DOCUMENTS. JOBSITE SAFETY AND MEANS AND METHODS OF CONSTRUCTION ARE SOLELY THE RESPONSIBILITY OF THE CONTRACTOR.

- a. CONT CONTINUOUS INSPECTION. SPECIAL INSPECTOR SHALL BE ON SITE AT ALL TIMES OBSERVING THE WORK REQUIRING SPECIAL INSPECTION. b. PERIODIC - PERIODIC INSPECTION. INSPECTION SHALL BE PERFORMED AT INTERVALS NECESSARY TO CONFIRM THAT THE WORK REQUIRING SPECIAL INSPECTION IS IN CONFORMANCE WITH APPROVED CONTRACT DOCUMENTS.
- DEFINITIONS AND ABBREVIATIONS STEEL CONSTRUCTION a. QC - FABRICATOR OR ERECTOR INSPECTION PERSONNEL.

b.	QA - THIRD PARTY INSPECTION PERSONNEL QUALIFIED IN ACCORDANCE WITH THE LOCAL BUILDING CODE REQUIREMENTS.
C.	O - OBSERVE THESE ITEMS ON A RANDOM BASIS. OPERATIONS NEED NOT BE DELAYED PENDING THESE INSPECTION
d.	P - PERFORM THESE TASKS FOR EACH WELDED JOINT OR MEMBER, EACH BOLTED CONNECTION, OR EACH COMPOSITEEL ELEMENT.

TABLE 1 Soils (See table 1705.6)						
Item	Code reference and standard	Frequency		Remarks		
		Continuous	Periodic			
Verify materials below shallow foundations are adequate to achieve the design bearing capacity	Geotechnical report		x	Prior to the inspector's review of the footing reinforcing.		
Verify excavations are extended to proper depth and have reached proper material			х			
Perform classifications and testing of compacted fill materials	IBC 1803.5.1		x			
Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill	Geotechnical report	х				
Testing of compacted fill materials	Geotechnical report		х	Testing of sub-grade material is to be carried out immediately prior to installation of slab on grade components or foundations.		
Prior to placement of compacted fill, observe subgrade and verify that site has been prepared properly			х			
TABLE 2 Cast-in-place Deep Foundation Elements (See Table 1705.8)						
Item	Code reference and standard	Frequency		Remarks		
		Continuous	Periodic			

	Code reference and			
Item	standard	Frequ	iency	Remarks
		Continuous	Periodic	
Inspect drilling operations and maintain complete and accurate records for each element.		х		
Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock, (if applicable) and adequate end bearing strata capacity. Record concrete or grout volumes.		x		
For concrete elements, perform tests and additional special inspections in accordance with section 1705.3.				

Concrete Construction (See Table 1705.3)

Constitution (Coo Tubic 1766.5)				
Item	Code reference and standard	Frequ	uency	Remarks
		Continuous	Periodic	
Inspection of reinforcing steel, including placement	ACI 318: 3.5, 7.1-7.7 IBC 1704.4, 1907.5, 1913.4, 1901.4.2		х	All placement of reinforcement shall be reviewed prior to any concrete being placed in the section poured
Steel welding	AWS D1.4 ACI 318: 26.6.4	x	х	Butt welded reinforcing shall be tested by radiographic or magnetic particle methods Parallel-welded reinforcing shall be visually inspected
Inspection of anchors cast in concrete, including placement	ACI 318: 8.1.3, 21.1.8	x		
Hardened concrete members	ACI 318: 17.8.2 ICC Report	x	х	Continuous inspection required of of all repairs made to anchors
Testing of anchors post-installed in hardened concrete members	ICC Report		х	 a. Proof load test of 10% of adhesive anchors to manufactuerer's specified capacity b. Randomly select 2% or minimum of 3 epoxy anchors for testing to failure. Anchors shall be replaced at the expense of the contractor c. If any anchors fail proof load test, proof load test 100% of the anchors d. proof load test 100% of the anchors installed without complete epoxy or are embedded less than 90% of the depth indicated on the drawings
Verifying use of required design mix	ACI 318: Ch. 19, 26.4.3, 26.4.4 IBC 1904.2, 1910.2, 1910.3		х	
At the time fresh concrete is sampled to fabricate specimens for strength tests, peform slump and air content tests, and determine the temperature of the concrete	ASTM C172 ASTM C32 ACI 381: 5.6, 5.8 IBC 1910.10	х		Minimum of 3 test cylinders shall be cast for each 50 cubic yards or eachday's pour, whicever is less. Test one at 7 days and two at 28 days and submit written reports for review. Test reports shall identify the locations where concerete is being tested with gridlines and elevations.
Concrete placement	ACI 318: 18.20 IBC 1905	х		
Verify maintenance of specified curing temperature and techniques	ACI 318: 5.11-5.13 CBC 1908.9		х	
Verification of in-situ concrete strength prior to removal of shores and forms	ACI 318: 6.2		х	
Inspect formework for shape, location and dimensions of the concrete member being formed	ACI 318: 6.1.1		х	

TABLE 4 Timber				
ltem	Code reference and standard	Frequ	uency	Remarks
		Continuous	Periodic	
Fabricator quality control for glulam and CLT components	ANSI A190 (glulam) ANSI / APA PRG 320		х	Review certificate and plant quality control procedures Review tolerances and clean-out procedures for machining HBV connector cavities CLT shall be manufactured with wood moisture content of 12% (+/- 2%) to maintain moisture content of 12% (+/- 2%)
Fabricator quality control procedures for epoxy HBV connectors	DIBt approval Z-9.1-557		x	Daily production records indicating - wood moisture content - temperature and relative humidity - target vs. applied expody volumes - time elapsed between filling wood cavities with eqpoxy and introducing and aligning connectors
Material certification			x	a. Review mill reports, certificates, and grade indentification submittal for steel HBV connectorsb. Review submittals indicating adhesive components, species, and grade for all timber components
Inspection of mass timber connections, including CLT, glulam, LVL, PSL, and LSL connections, and including connections between mass timber and steel or concrete elements.			х	All connections shall be visually inspected prior to covering up
Inspection of HBV mesh for timber concrete composite elements			х	All HBV mesh shall be visually inspected prior to pouring concrete
Inspection of HBV and HSK installation in shop	DIBt approval and TiComTec's in person training by Dr. Bathon and Rainer Bahmer	х	х	Upon training provided by HBV supplier's certified representative, the special inspector is to review the following items in shop: a. Continuously review groove dimensions and locations of grooves within the timber elements b. Continuously review injection of the HBV shear connector to timber Adhesive (based on polyurethane or epoxy resirc. Continuously review installation of the HBV shear connector expanded metal parts. d. Periodically monitor HBV installation techniques e. Continuously monitor that daily production records are accurate, including wood moisture content, temperature and relative humidity, epoxy volumes, and time elapsed between filling wood cavities and introducing the connectors (for manufacturer's specifications). Review of the HBV installation in shop is also to be performed by the following secondary parties:
				 HBV supplier's certified representative EOR or EOR's representative Third-party qualified agency approved by the AHJ All secondary parties are to review the following items: Periodically review groove dimensions and locations of grooves within the timber elements Periodically review injection of the HBV shear connector to timber Adhesive (based on polyurethane or epoxy resin Periodically review installation of the HBV shear connector expanded metal parts. Periodically monitor HBV installation techniques Periodically monitor that daily production records are accurate, including wood moisture content, temperature and relative humidity, epoxy volumes, and time elapsed between filling wood cavities and introducing the connectors (for manufacturer's specifications).
Nailing, bolting, anchoring, and other fastening to other componenets of the seismic force-resisting system where the fastener spacing of the sheathing is less than 4 inches on center.	OSSC 2014 1705.11.2		x	
Connections for diaphragm chords, collectors, bracing, and shear wall anchorage and hold downs	OSSC 2014 1705.11.2		х	All connections visually inspected prior to covering up
Inspection of installation of self-tapping screws	ICC ESR-3178 ICC ESR-3179		х	 a. Identify the screw type, dimension, and length b. Side member is in direct contact with main member, with no gap c. Screws are driven using the manufacturer recommended drill bit d. Upon installation the flat surface of the countersunk heads and the top of the cylindrical heads must be flush with the surface of the side member e. Screws are not overdriven f. Pilot holes are used according to the self-tapping screw manufacturer's recommendations
Inspection of installation of pre-engineered hanger connectors	European Technical Assessment ETA-15/0667	x		 a. The connector shall be in close contact with the steel or concrete over the whole face b. Pilot holes are used according to the self-tapping screw manufacturer's recommendations c. Timber members shall have plane surfaces against the connector d. There is virtually no gap between timber members
Field gluing of HBV or HSK mesh	DIBt approval and TiComTec's in person training by Dr. Bathon and Rainer Bahmer	x		Upon training provided by HBV supplier's certified representative, the special inspector is to review the following items in field: a. Continuously review groove dimensions and locations of grooves within the timber elements b. Continuously review injection of the HBV shear connector to timber Adhesive (based on polyurethane or epoxy resi c. Continuously review installation of the HBV shear connector expanded metal parts. d. Periodically monitor HBV installation techniques e. Continuously monitor that daily production records are accurate, including wood moisture content, temperature and relative humidity, epoxy volumes, and time elapsed between filling wood cavities and introducing the connectors (for manufacturer's specifications).
				Review of the HBV installation in field is also to be performed by the following secondary parties: 1. HBV supplier's certified representative 2. EOR or EOR's representative 3. Third-party qualified agency approved by the AHJ
				 All secondary parties are to review the following items: a. Periodically review groove dimensions and locations of grooves within the timber elements b. Periodically review injection of the HBV shear connector to timber Adhesive (based on polyurethane or epoxy resin c. Periodically review installation of the HBV shear connector expanded metal parts. d. Periodically monitor HBV installation techniques e. Periodically monitor that daily production records are accurate, including wood moisture content, temperature and relative humidity, epoxy volumes, and time elapsed between filling wood cavities and introducing the connectors (for manufacturer's specifications).

TABLE 5 Fire-resistant material			
Item	Code reference and standard	Frequency	Remarks
Sprayed fire-resistant materials	CBC 1705.14	See CBC requirements	
Mastic and intumescent fire-resistant coatings	CBC 1705.15	See CBC requirements	

1. 2. 3. 4. 5. 6. 7.	WELDING PROCEDURE SPECIFICATIONS (WPSs) AVAILABLE MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE MATERIAL IDENTIFICATION (TYPE/GRADE) WELDER IDENTIFICATION SYSTEM¹ FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY)	P P O	QA P P	COMMEN
3. 4. 5. 6. 7.	MATERIAL IDENTIFICATION (TYPE/GRADE) WELDER IDENTIFICATION SYSTEM¹		Р	
4. 5. 6. 7.	WELDER IDENTIFICATION SYSTEM ¹	Ο		
5. 6. 7. 8.		0	0	
7. 8.	,			
7. 8.	a. JOINT PREPARATION			
7. 8.	b. DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL)	0	0	
7. 8.	c. CLEANLINESS (CONDITION OF STEEL SURFACES) d. TACKING (TACK WELD QUALITY AND LOCATION)			
7. 8.	e. BACKING TYPE AND FIT (IF APPLICABLE)			
8. ¹ THE F	CONFIGURATION AND FINISH OF ACCESS HOLES FIT-UP OF FILLET WELDS	0	0	
¹ THE F	a. DIMENSIONS (ALIGNMENT, GAPS AT ROOT)			
¹ THE F	b. CLEANLINESS (CONDITION OF STEEL SURFACES)	0	0	
¹ THE F	c. TACKING (TACK WELD QUALITY AND LOCATION)			
	CHECK WELDING EQUIPMENT FABRICATOR OR ERECTOR, AS APPLICABLE, SHALL MAINTAIN A SYSTEM BY WHICH A WELDER	0	- I DED A IOINT	
	FIED. STAMPS, IF USED, SHALL BE THE LOW-STRESS TYPE.		LDLD A JOINT	
INSPE	CTION TASKS DURING WELDING USE OF QUALIFIED WELDERS	QC O	QA	COMMEN
2.	CONTROL AND HANDLING OF WELDING CONSUMABLES			
	a. PACKAGING	0	0	
	b. EXPOSURE CONTROL			
3. 4.	NO WELDING OVER CRACKED TACK WELDS ENVIRONMENTAL CONDITIONS	0	0	
	a. WIND SPEEDS WITHIN LIMITS	0	0	
	b. PRECIPITATION AND TEMPERATURE			
5.	WPS FOLLOWED a. SETTINGS ON WELDING EQUIPMENT			
<u> </u>	a. SETTINGS ON WELDING EQUIPMENT b. TRAVEL SPEED			
	c. SELECTED WELDING MATERIALS	0	0	
<u> </u>	d. SHIELDING GAS TYPE/FLOW RATE	-		
<u> </u>	e. PREHEAT APPLIED f. INTERPASS TEMPERATURE MAINTAINED (MIN./MAX.)			
	g. PROPER POSITION (F, V, H, OH)			
6.	WELDING TECHNIQUES			
	a. INTERPASS AND FINAL CLEANING b. EACH PASS WITHIN PROFILE LIMITATIONS	0	0	
	b. EACH PASS WITHIN PROFILE LIMITATIONS c. EACH PASS MEETS QUALITY REQUIREMENTS			
INSPE	CTION TASKS AFTER WELDING	QC	QA	COMMEN
1. 2.	WELDS CLEANED SIZE, LENGTH AND LOCATION OF WELDS	<u>О</u> Р	O P	
3.	WELDS MEET VISUAL ACCEPTANCE CRITERIA			
	a. CRACK PROHIBITION			
	b. WELD/BASE-METAL FUSION c. CRATER CROSS SECTION	_	_	
	d. WELD PROFILES	Р	P	
	e. WELD SIZE			
	f. UNDERCUT g. POROSITY			
4.	ARC STRIKES	Р	Р	
5. 6.	k-AREA¹ BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)	<u>Р</u> Р	P P	
7.	REPAIR ACTIIVIES DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER	P P	P P	
8. ¹ WHEN	N WELDING DOUBLER PLATES, CONTINUITY PLATES OR STIFFENERS HAS BEEN PERFORMED	<u> </u>		 SPECT THE WEB k-A
FOR CF	RACKS WITHIN 3 INCHES OF THE WELD.		1	
	ESTRUCTIVE TESTING (NDT) OF WELDED JOINTS	QC	QA	COMMENT
1. 2.	PROCEDURES REQUIRED PER PROJECT DRAWINGS AND SPECIFICATIONS CJP GROOVE WELD UT TESTING	-	P P	
3.	ACCESS HOLE MT AND PT TESTING (THERMALLY CUT SURFACES GREATER		P	REFER TO AIS
	THAN 2 INCHES)	-		360-16 SECTIC FOR EXTENT (
4. 5.	WELDED JOINTS SUBJECTED TO FATIGUE UT TESTING REDUCTION OF RATE OF ULTRASONIC TESTING	<u>-</u> Р	P P	TESTING AND ADDITIONAL
6.	INCREASE IN RATE OF ULTRASONIC TESTING	<u>Р</u> Р	P	REQUIREMEN
7.	DOCUMENTATION OF ALL NDT	<u> Р</u>	Р	
	CTION TASKS PRIOR TO BOLTING	QC	QA	COMMEN
1.	MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS	0	P	
3.	PROPER FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT	0	0	
	LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)	0	0	
4. 5.	PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE	U	0	
	CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE	0	0	
6.	REQUIREMENTS PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL			
	OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS	Р	0	
7	USED			
7.	PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS	0	0	
h	CTION TASKS DURING BOLTING	QC	QA	COMMENT
1.	FASTENER ASSEMBLIES, OF SUITABLE CONDITION, PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE POSITIONED AS REQUIRED	0	0	
2.	JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO THE	0	0	
2	PRETENSIONING OPERATION	J		
3.	FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING	0	0	
4.	FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC			
	SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES	0	0	
INSPE	CTION TASKS AFTER BOLTING	QC	QA	COMMEN.
1.	DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS POSITE CONSTRUCTION PRIOR TO CONCRETE PLACEMENT	P QC	P QA	COMMEN
1.	PLACEMENT AND INSTALLATION OF STEEL DECK	P	P QA	CONTINIEN

1705.12.1 STRUCTURAL STEEL	0	ıC	(QA	REFER TO AISC 3
INSPECTION TASKS		DOC.		DOC.	_
VISUAL INSPECTION TASKS PRIOR TO WELDING	0				
MATERIAL IDENTIFICATION (TYPE/GRADE) WELDER IDENTIFICATION SYSTEM	0	-	0	-	
3. FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY) a. JOINT PREPARATION					
b. DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL)	P/O**	_	0	_	
c. CLEANLINESS (CONDITION OF STEEL SURFACES) d. TACKING (TACK WELD QUALITY AND LOCATION)	. / 🧷				
e. BACKING TYPE AND FIT (IF APPLICABLE)	•				
4. CONFIGURATION AND FINISH OF ACCESS HOLES 5. FIT-UP OF FILLET WELDS	0	-	0	-	
a. DIMENSIONS (ALIGNMENT, GAPS AT ROOT)	P/O**	_	P/O**	_	
b. CLEANLINESS (CONDITION OF STEEL SURFACES) c. TACKING (TACK WELD QUALITY AND LOCATION)	' ' '		.,,		
VISUAL INSPECTION TASKS DURING WELDING	1		1	· · · · · ·	
1. WPS FOLLOWED a. SETTINGS ON WELDING EQUIPMENT	_				
b. TRAVEL SPEED					
c. SELECTED WELDING MATERIALS d. SHIELDING GAS TYPE/FLOW RATE	0	_	0	_	
e. PREHEAT APPLIED					
f. INTERPASS TEMPERATURE MAINTAINED (MIN/MAX.) g. PROPER POSITION (F, V, H, OH)	-				
h. INTERMIX OF FILLER METALS AVOIDED UNLESS APPROVED					
USE OF QUALIFIED WELDERS CONTROL AND HANDLING OF WELDING CONSUMABLES	0	-	0	-	
a. PACKAGING	0	-	0	-	
b. EXPOSURE CONTROL 4. ENVIRONMENTAL CONDITIONS					+
a. WIND SPEED WITHIN LIMITS	0	-	0	-	
b. PRECIPITATION AND TEMPERATURE 5. WELDING TECHNIQUES					+
a. INTERPASS AND FINAL CLEANING	0	_	0	_	
 b. EACH PASS WITHIN PROFILE LIMITATIONS c. EACH PASS MEETS QUALITY REQUIREMENTS 	-				
6. NO WELDING OVER CRACKED TACKS	0	-	0	-	
VISUAL INSPECTION TASKS AFTER WELDING 1. WELDS CLEANED	0	_	0	-	
2. SIZE, LENGTH, AND LOCATION OF WELDS	P	-	P	-	
WELDS MEET VISUAL ACCEPTANCE CRITERIA a. CRACK PROHIBITION	-				
b. WELD/BASE-METAL FUSION				_	
c. CRATER CROSS SECTION d. WELD PROFILES AND SIZE	P	D	P	D	
e. UNDERCUT					
f. POROSITY 4. PLACEMENT OF REINFORCING OR CONTOURING FILLET WELDS (IF REQUIRED)	P	D	P	D	
5. BACKING REMOVED, WELD TABS REMOVED AND FINISHED, AND FILLET WELDS	P	D	' Р	D	
ADDED (IF REQUIRED) 6. REPAIR ACTIVITIES	' Р	-	' Р	D	
INSPECTION TASKS PRIOR TO BOLTING		I			
PROPER FASTENERS SELECTED FOR THE JOINT DETAIL PROPER BOLTING PROCEDURE SELECTED FOR THE JOINT DETAIL	0	-	0	-	
3. CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE					
CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS.	0	_	0	<u> </u>	
PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED FOR FASTENER ASSEMBLIES AND METHODS USED	Р	D	0	D	
5. PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER			<u> </u>	 	+
FASTENER COMPONENTS	0	_	0		
NSPECTION TASKS DURING BOLTING 1 FASTENER ASSEMBLIES PLACED IN ALL HOLES AND WASHERS (IF REQUIRED)					
1. ARE POSITIONED AS REQUIRED	0	-	0		
2. JOINT BROUGHT TO THE SNUG TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION	0	-	0	-	
3. FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM	0	_	0	_	
ROTATING 4. BOLTS ARE PRETENSIONED PROGRESSING SYSTEMATICALLY FROM THE MOST					
RIGID POINT TOWARD THE FREE EDGES	0	-	0	-	
INSPECTION TASKS AFTER BOLTING 1. DOCUMENT ACCEPTED AND REJECTED CONNECTIONS	Р	D	Р	D	
1705.12.2 STRUCTURAL WOOD	<u>'</u>		-		1
INSPECTION TASKS	CO	FREQI	UENCY PERI	ODIC	COMMENTS
FIELD GLUING OPERATIONS OF ELEMENTS OF THE SEISMIC FORCE-RESISTING			PEKI	טועט	
1. SYSTEM.	,	Χ		-	
NAILING, BOLTING, ANCHORING AND OTHER FASTENING OF ELEMENTS OF THE 2. SEISMIC FORCE-RESISTING SYSTEM, INCLUDING WOOD SHEAR WALLS, WOOD		_		X	
DIAPHRAGMS, DRAG STRUTS, BRACES, SHEAR PANELS AND HOLD-DOWNS.					
1705.12.4 DESIGNATED SEISMIC SYSTEMS EXAMINE DESIGNATED SEISMIC SYSTEMS REQUIRING SEISMIC QUALIFICATION					
1. IN ACCORDANCE WITH SECTION 13.2.2 OF ASCE 7 AND VERIFY THAT THE LABEL,		-		X	
ANCHORAGE AND MOUNTING CONFORM TO THE CERTIFICATE OF COMPLIANCE. 1705.12.5 ARCHITECTURAL COMPONENTS					1
ERECTION AND FASTENING OF EXTERIOR CLADDING, INTERIOR AND EXTERIOR		_	,	×	
 NONBEARING WALLS, AND INTERIOR AND EXTERIOR VENEER ANCHORAGE OF ACCESS FLOORS 				^ X	1
1705.12.6 PLUMBING, MECHANICAL AND ELECTRICAL COMPONENTS		·			1
ANCHORAGE OF ELECTRICAL EQUIPMENT FOR EMERGENCY AND STANDBY 1. POWER SYSTEMS.		_		X	
ANCHORAGE OF OTHER ELECTRICAL EQUIPMENT IN STRUCTURES ASSIGNED					1
2. TO SEISMIC DESIGN CATEGORY E OR F.		-	,	X	
 INSTALLATION AND ANCHORAGE OF PIPING SYSTEMS DESIGNED TO CARRY HAZARDOUS MATERIALS AND THEIR ASSOCIATED MECHANICAL UNITS. 		-	-	X	
4. INSTALLATION AND ANCHORAGE OF DUCTWORK DESIGNED TO CARRY			,	· · · · · · · · · · · · · · · · · · ·	
HAZARDOUS MATERIALS.		-	,	X	
F. INOTALLATION AND ANGUIGN OF COLUMN TO THE]			.,	
5. INSTALLATION AND ANCHORAGE OF VIBRATION ISOLATION SYSTEMS WHERE THE APPROVED CONSTRUCTION DOCUMENTS REQUIRE A NOMINAL CLEARANCE				.,	1
THE APPROVED CONSTRUCTION DOCUMENTS REQUIRE A NOMINAL CLEARANCE OF 1/4 INCH OR LESS BETWEEN THE EQUIPMENT SUPPORT FRAME AND		-		X	
THE APPROVED CONSTRUCTION DOCUMENTS REQUIRE A NOMINAL CLEARANCE OF 1/4 INCH OR LESS BETWEEN THE EQUIPMENT SUPPORT FRAME AND RESTRAINT.		-	,	x 	
THE APPROVED CONSTRUCTION DOCUMENTS REQUIRE A NOMINAL CLEARANCE OF 1/4 INCH OR LESS BETWEEN THE EQUIPMENT SUPPORT FRAME AND RESTRAINT. 1705.12.7 STORAGE RACKS 1. ANCHORAGE OF STORAGE RACKS THAT ARE 8 FEET OR GREATER IN HEIGHT		-		x X	
THE APPROVED CONSTRUCTION DOCUMENTS REQUIRE A NOMINAL CLEARANCE OF 1/4 INCH OR LESS BETWEEN THE EQUIPMENT SUPPORT FRAME AND RESTRAINT. 1705.12.7 STORAGE RACKS		-			

INSPECTION TASKS	TASK	DOC.	TASK	DOC.	AND AWS D1.8
VISUAL INSPECTION TASKS PRIOR TO WELDING 1. MATERIAL IDENTIFICATION (TYPE/GRADE)	0	_	0	-	
2. WELDER IDENTIFICATION SYSTEM	0	-	Ō	-	
FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY) a. JOINT PREPARATION					
b. DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL)	P/O**		0		
c. CLEANLINESS (CONDITION OF STEEL SURFACES)	P/O***	-		-	
d. TACKING (TACK WELD QUALITY AND LOCATION) e. BACKING TYPE AND FIT (IF APPLICABLE)					
4. CONFIGURATION AND FINISH OF ACCESS HOLÉS	0	-	0	-	
FIT-UP OF FILLET WELDS a. DIMENSIONS (ALIGNMENT, GAPS AT ROOT)					
a. DIMENSIONS (ALIGNMENT, GAPS AT ROOT) b. CLEANLINESS (CONDITION OF STEEL SURFACES)	P/O**	-	P/O**	-	
c. TACKING (TACK WELD QUALITY AND LOCATION)					
/ISUAL INSPECTION TASKS DURING WELDING 1. WPS FOLLOWED					
a. SETTINGS ON WELDING EQUIPMENT					
b. TRAVEL SPEED c. SELECTED WELDING MATERIALS					
c. SELECTED WELDING MATERIALS d. SHIELDING GAS TYPE/FLOW RATE	0	_	0	_	
e. PREHEAT APPLIED					
f. INTERPASS TEMPERATURE MAINTAINED (MIN/MAX.) g. PROPER POSITION (F, V, H, OH)					
h. INTERMIX OF FILLER METALS AVOIDED UNLESS APPROVED					
USE OF QUALIFIED WELDERS CONTROL AND HANDLING OF WELDING CONSUMABLES	0	-	0	-	
a. PACKAGING	0	-	0	-	
b. EXPOSURE CONTROL					
ENVIRONMENTAL CONDITIONS a. WIND SPEED WITHIN LIMITS	0	_	0	_	
b. PRECIPITATION AND TEMPERATURE					
5. WELDING TECHNIQUES					
a. INTERPASS AND FINAL CLEANING b. EACH PASS WITHIN PROFILE LIMITATIONS	0	-	0	-	
c. EACH PASS MEETS QUALITY REQUIREMENTS					
6. NO WELDING OVER CRACKED TACKS //ISUAL INSPECTION TASKS AFTER WELDING	0	-	0	-	
1. WELDS CLEANED	0	-	0	-	
SIZE, LENGTH, AND LOCATION OF WELDS WELDS MEET VISUAL ACCEPTANCE CRITERIA	Р	-	Р	-	
a. CRACK PROHIBITION					
b. WELD/BASE-METAL FUSION c. CRATER CROSS SECTION	Р	D	P	D	
c. CRATER CROSS SECTION d. WELD PROFILES AND SIZE	P	ט			
e. UNDERCUT					
f. POROSITY 4. PLACEMENT OF REINFORCING OR CONTOURING FILLET WELDS (IF REQUIRED)	Р	D	P	D	
5. BACKING REMOVED, WELD TABS REMOVED AND FINISHED, AND FILLET WELDS	Р	D	Р	D	
ADDED (IF REQUIRED) 6. REPAIR ACTIVITIES	' P		Р	D	
NSPECTION TASKS PRIOR TO BOLTING	•				
PROPER FASTENERS SELECTED FOR THE JOINT DETAIL PROPER BOLTING PROCEDURE SELECTED FOR THE JOINT DETAIL	0	-	0	-	
3. CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE					
CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS.	0	-	0	-	
4. PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL	P	D	0	D	
OBSERVED FOR FASTENER ASSEMBLIES AND METHODS USED 5. PROPER STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER	·				
FASTENER COMPONENTS	0	-	0	-	
NSPECTION TASKS DURING BOLTING			1	1	
1. FASTENER ASSEMBLIES PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) 1. ARE POSITIONED AS REQUIRED	0	-	0	-	
JOINT BROUGHT TO THE SNUG TIGHT CONDITION PRIOR TO THE	0	_	0	_	
2. PRETENSIONING OPERATION 3. FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM					
ROTATING	0	-	0	-	
4. BOLTS ARE PRETENSIONED PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES	0	-	0	_	
NSPECTION TASKS AFTER BOLTING					
DOCUMENT ACCEPTED AND REJECTED CONNECTIONS	Р	D	Р	D	
705.12.2 STRUCTURAL WOOD		FREQ	JENCY		1
NSPECTION TASKS	СО	NT	PERI	ODIC	COMMENT
FIELD GLUING OPERATIONS OF ELEMENTS OF THE SEISMIC FORCE-RESISTING 1. SYSTEM.		(_	
NAILING, BOLTING, ANCHORING AND OTHER FASTENING OF ELEMENTS OF THE					
2. SEISMIC FORCE-RESISTING SYSTEM, INCLUDING WOOD SHEAR WALLS, WOOD		-		X	
DIAPHRAGMS, DRAG STRUTS, BRACES, SHEAR PANELS AND HOLD-DOWNS. 1705.12.4 DESIGNATED SEISMIC SYSTEMS					
EXAMINE DESIGNATED SEISMIC SYSTEMS EXAMINE DESIGNATED SEISMIC SYSTEMS REQUIRING SEISMIC QUALIFICATION					
1. IN ACCORDANCE WITH SECTION 13.2.2 OF ASCE 7 AND VERIFY THAT THE LABEL, ANCHORAGE AND MOUNTING CONFORM TO THE CERTIFICATE OF COMPLIANCE.		-)	X	
1705.12.5 ARCHITECTURAL COMPONENTS					
ERECTION AND FASTENING OF EXTERIOR CLADDING, INTERIOR AND EXTERIOR		_	Ι ,	X	
1. NONBEARING WALLS, AND INTERIOR AND EXTERIOR VENEER	<u> </u>	-		х Х	
2. ANCHORAGE OF ACCESS FLOORS 1705.12.6 PLUMBING, MECHANICAL AND ELECTRICAL COMPONENTS		-		^	
ANCHORAGE OF ELECTRICAL EQUIPMENT FOR EMERGENCY AND STANDBY POWER SYSTEMS.		-		<u></u>	
ANCHORAGE OF OTHER ELECTRICAL FOLIPMENT IN STRUCTURES ASSIGNED					
2. TO SEISMIC DESIGN CATEGORY E OR F.	-	-		X	
INSTALLATION AND ANCHORAGE OF PIPING SYSTEMS DESIGNED TO CARRY HAZARDOUS MATERIALS AND THEIR ASSOCIATED MECHANICAL UNITS.		-		X	
LIGA GIVEN OF THE CONTROL OF SECURITION OF SECURITION OF THE CONTROL OF THE CONTR				.,	
INSTALLATION AND ANCHORAGE OF DUCTWORK DESIGNED TO CARRY	- 	-	,	X	
INSTALLATION AND ANCHORAGE OF DUCTWORK DESIGNED TO CARRY HAZARDOUS MATERIALS.	. —				
4. INSTALLATION AND ANCHORAGE OF DUCTWORK DESIGNED TO CARRY HAZARDOUS MATERIALS. 5. INSTALLATION AND ANCHORAGE OF VIBRATION ISOLATION SYSTEMS WHERE			١,	Χ	
4. INSTALLATION AND ANCHORAGE OF DUCTWORK DESIGNED TO CARRY HAZARDOUS MATERIALS. 5. INSTALLATION AND ANCHORAGE OF VIBRATION ISOLATION SYSTEMS WHERE THE APPROVED CONSTRUCTION DOCUMENTS REQUIRE A NOMINAL CLEARANCE OF 1/4 INCH OR LESS BETWEEN THE EQUIPMENT SUPPORT FRAME AND	-	-	_ ′		I .
 INSTALLATION AND ANCHORAGE OF DUCTWORK DESIGNED TO CARRY HAZARDOUS MATERIALS. INSTALLATION AND ANCHORAGE OF VIBRATION ISOLATION SYSTEMS WHERE THE APPROVED CONSTRUCTION DOCUMENTS REQUIRE A NOMINAL CLEARANCE OF 1/4 INCH OR LESS BETWEEN THE EQUIPMENT SUPPORT FRAME AND RESTRAINT. 					
4. INSTALLATION AND ANCHORAGE OF DUCTWORK DESIGNED TO CARRY HAZARDOUS MATERIALS. 5. INSTALLATION AND ANCHORAGE OF VIBRATION ISOLATION SYSTEMS WHERE THE APPROVED CONSTRUCTION DOCUMENTS REQUIRE A NOMINAL CLEARANCE OF 1/4 INCH OR LESS BETWEEN THE EQUIPMENT SUPPORT FRAME AND RESTRAINT.	-	-		×	
4. INSTALLATION AND ANCHORAGE OF DUCTWORK DESIGNED TO CARRY HAZARDOUS MATERIALS. 5. INSTALLATION AND ANCHORAGE OF VIBRATION ISOLATION SYSTEMS WHERE THE APPROVED CONSTRUCTION DOCUMENTS REQUIRE A NOMINAL CLEARANCE OF 1/4 INCH OR LESS BETWEEN THE EQUIPMENT SUPPORT FRAME AND	-	-		X	
4. INSTALLATION AND ANCHORAGE OF DUCTWORK DESIGNED TO CARRY HAZARDOUS MATERIALS. 5. INSTALLATION AND ANCHORAGE OF VIBRATION ISOLATION SYSTEMS WHERE THE APPROVED CONSTRUCTION DOCUMENTS REQUIRE A NOMINAL CLEARANCE OF 1/4 INCH OR LESS BETWEEN THE EQUIPMENT SUPPORT FRAME AND RESTRAINT. 1705.12.7 STORAGE RACKS 1. ANCHORAGE OF STORAGE RACKS THAT ARE 8 FEET OR GREATER IN HEIGHT	-	-)	X X	

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LOK C, PHIROZE W.,
YVONNE C.

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or sub-contractors.

1705.13 TESTING FOR SEISMIC RESISTANCE 1705.13.1 STRUCTURAL STEEL

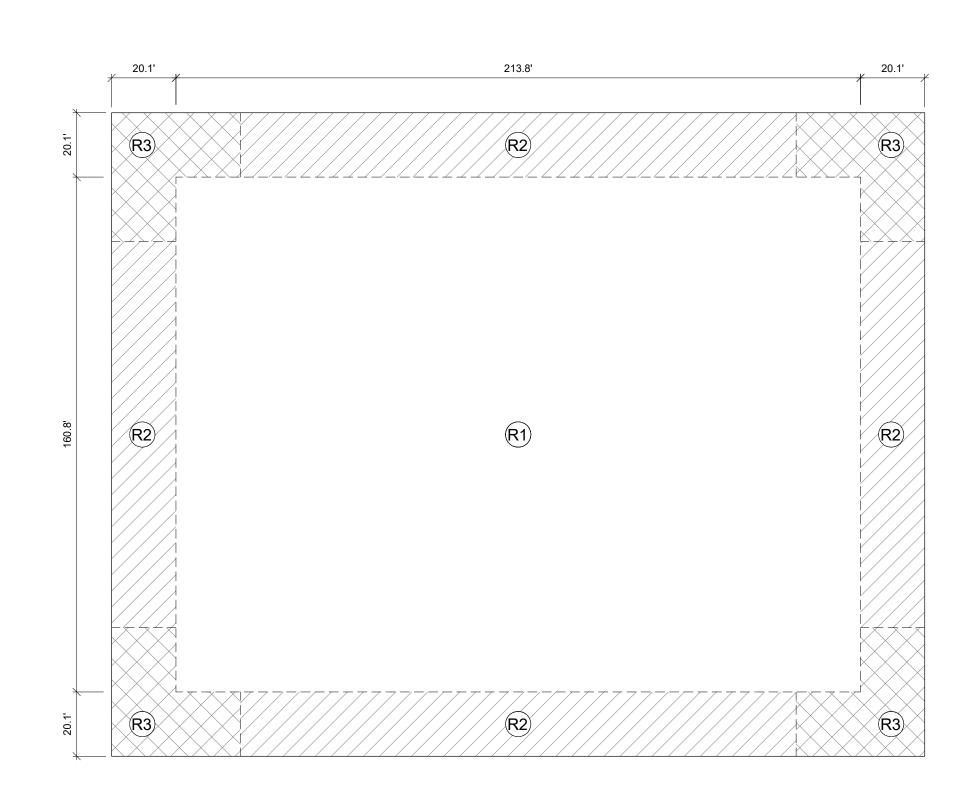
1. NONDESTRUCTIVE TESTING OF WELDED JOINTS a. k-AREA MT TESTING PER AISC 341 SECTION J6.2a FOR DCW WELDS

ONLY

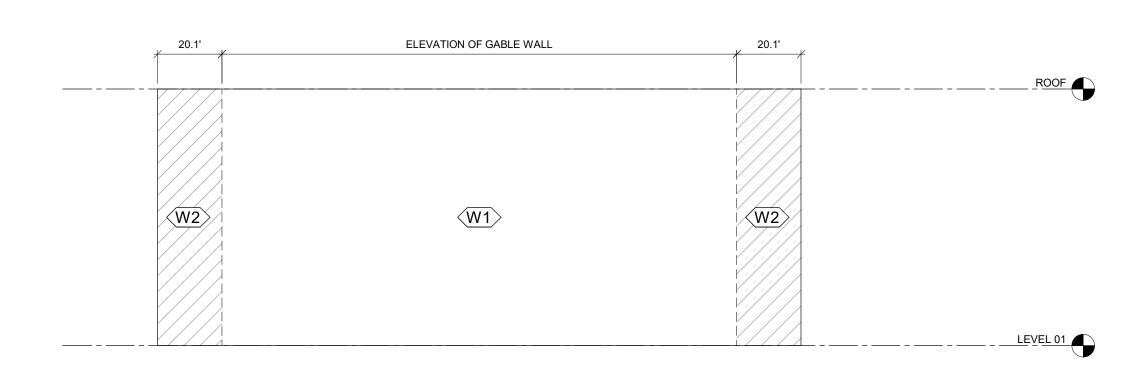
7/28/2020 CJP GROOVE WELD UT AND MT TESTING PER AISC 341 SECTION J6.2b BASE METAL UT TESTING FOR LAMELLAR TEARING AND LAMINATIONS c. PER AISC 341 SECTION J6.2c BEAM COPE AND ACCESS HOLE MT OR PT TESTING PER AISC 341
d. SECTION J6.2d REDUCED BEAM SECTION REPAIR MT TESTING PER AISC 341 SECTION e. J6.2e f. WELD TAB REMOVAL SITES MT TESTING PER AISC 341 SECTION J6.2f P P
g. ADDITIONAL TESTING PER PROJECT DRAWINGS AND SPECIFICATIONS P P 1705.13.2 NONSTRUCTURAL COMPONENTS OBTAIN MANUFACTURER'S CERTIFICATE OF COMPLIANCE FOR SEISMIC QUALIFICATION INDICATING CONFORMANCE WITH ITEM 2 OF ASCE 7 SECTION 13.2.1. 1705.13.3 DESIGNATED SEISMIC SYSTEMS OBTAIN MANUFACTURER'S CERTIFICATE OF COMPLIANCE FOR SEISMIC QUALIFICATION INDICATING CONFORMANCE WITH ASCE 7 SECTION 13.2.2.

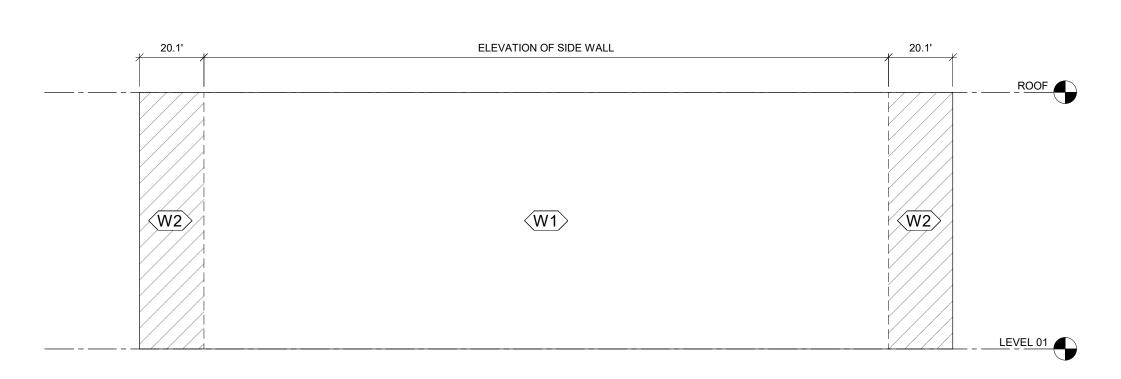
ISSUED FOR PERMIT 06/01/2020 1 PLAN CHECK 09/03/2020 RESPONSE 1

CHECKED BY: ISSUE DATE:



8 ZONE PRESSURES - ROOF PLAN 1" = 30'-0"





7 ZONE PRESSURES - WALL ELEVATIONS 1" = 30'-0"

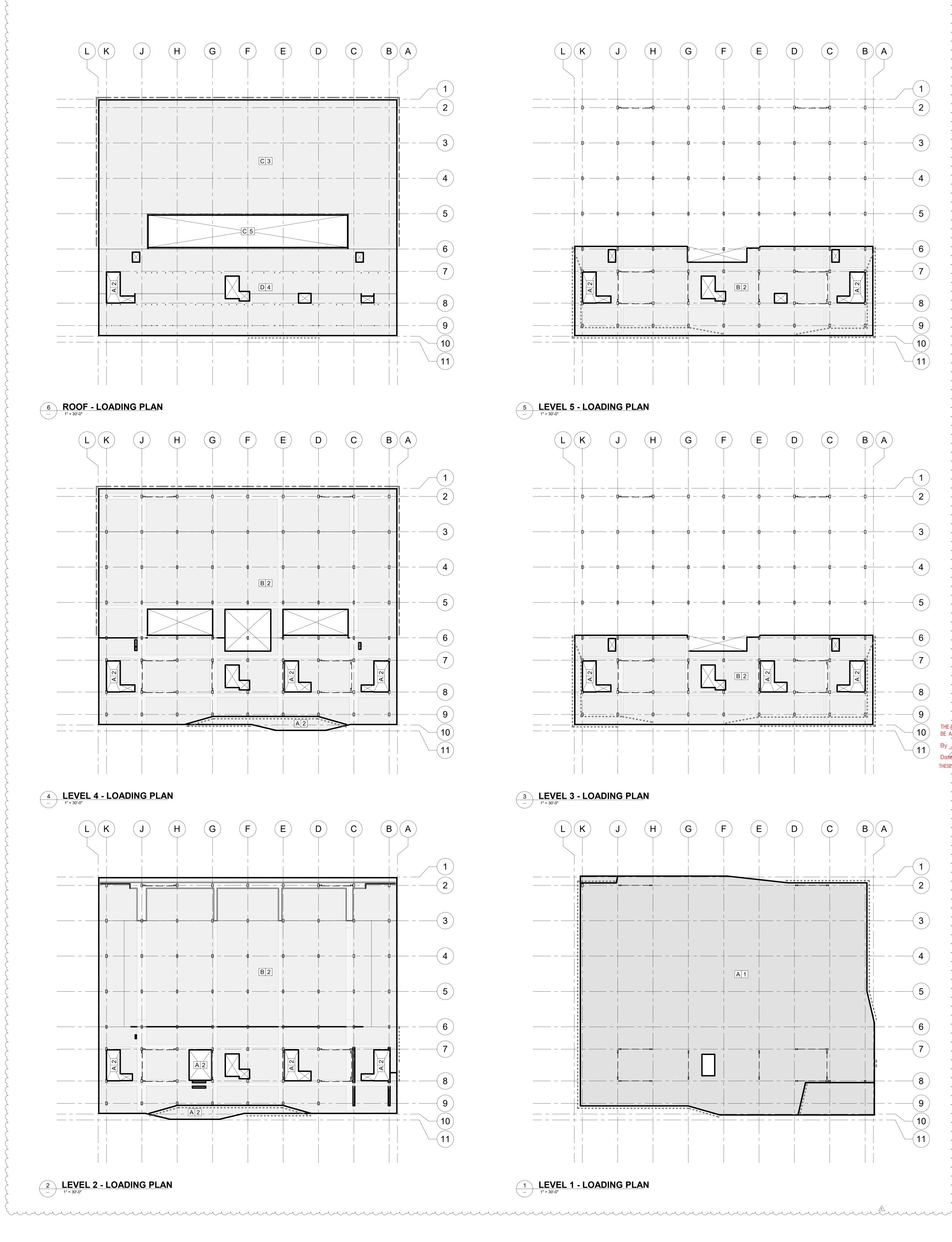
		COMPON WIN	IENT & C			N			
	WA	LLS		ROOF					
COMPONENT	WALL ZONE	POSITIVE LOADING (PSF)	NEGATIVE LOADING (PSF)	COMPONENT	ROOF ZONE	POSITIVE LOADING (PSF)	NEGATIVE LOADING (PSF)		
<=20 sf (W)	W1	24.1	-	<=10 sf	R1	-	-35.2		
50 sf (W)	W1	22.2	-	20 sf	R1	-	-33.2		
200 sf (W)	W1	19.3	-	50 sf	R1	-	-30.6		
>500 sf (W)	W1	17.4	-	>100 sf	R1	-	-28.6		
<=20 sf (L/S)	W1	-	-24.1	<=10 sf	R2	-	-55.3		
50 sf (L/S)	W1	-	-22.8	20 sf	R2	-	-52.5		
200 sf (L/S)	W1	-	-20.9	50 sf	R2	-	-48.8		
>500 sf (L/S)	W1	-	-19.6	>100 sf	R2	-	-46.1		
<=20 sf (W)	W2	24.1	-	<=10 sf	R3	-	-75.3		
50 sf (W)	W2	22.2	-	20 sf	R3	-	-71.8		
200 sf (W)	W2	19.3	-	50 sf	R3	-	-67.1		
>500 sf (W)	W2	17.4	-	>100 sf	R3	-	-63.5		
<=20 sf (L/S)	W2	-	-44.1		•	•	•		
50 sf (L/S)	W2	-	-39.1						
200 sf (L/S)	W2	-	-31.4						
>500 sf (L/S)	W2	-	-26.3	1					

LOAD MAP KEY

 SUPERIMPOSED DEAD LOAD (SDL) DESIGNATIONS LIVE LOAD (LL) DESIGNATIONS

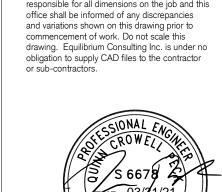
MARK	USE	UNIFORM LOAD (PSF)	CONCENTRATED LOAD (LBF)
Α	LOBBIES, BALCONIES, STAIRS, EXITS, FIRST FLOOR CORRIDORS, RESTAURANTS	100 (R)	2000
В	OFFICES AND CORRIDORS SERVING THEM	80 (R)	2000
С	ROOFS	20 (R)	300
D	CATWALKS	40 (R)	300

PLAN CALL OUT	USE	TOTAL UNIFORM LOAD (PSF)	FLOOR FINISH LOAD (PSF)	CEILING/MEP LOAD (PSF)	OTHER DEAD LOAD (PSF)	OTHER LOAD DESCRIPTION
1	FIRST FLOOR	5	5	0	0	-
2	TYPICAL UPPER FLOOR	19	15	4	0	-
3	TYPICAL ROOF	22	7	5	10	-
4	ROOF MECHANICAL AREA	59	7	52	0	-
5	SKYLIGHT	26	0	11	15	-



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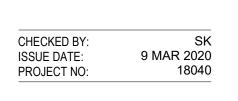




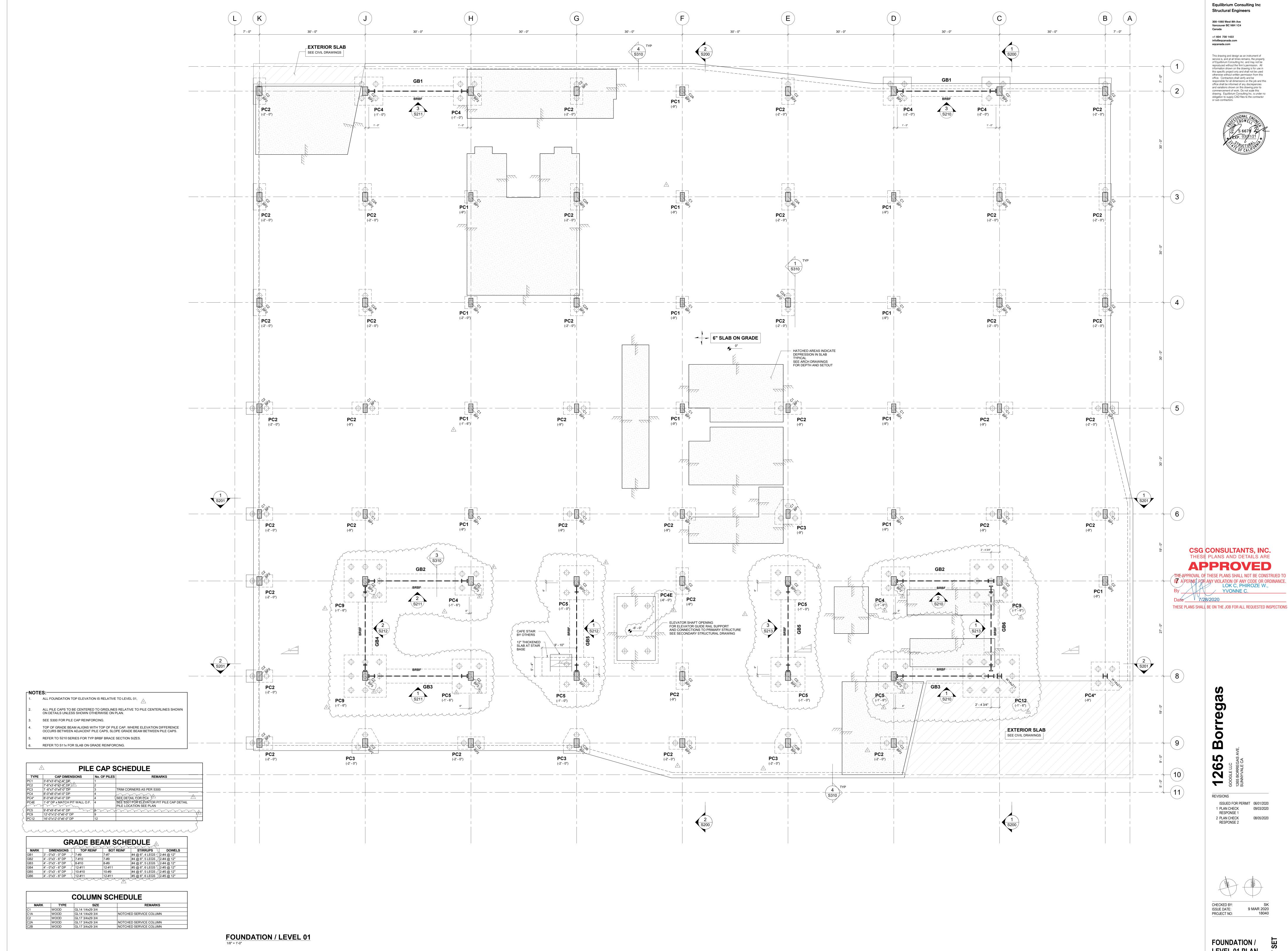
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REVISIONS ISSUED FOR PERMIT 06/01/2020 1 PLAN CHECK RESPONSE 1

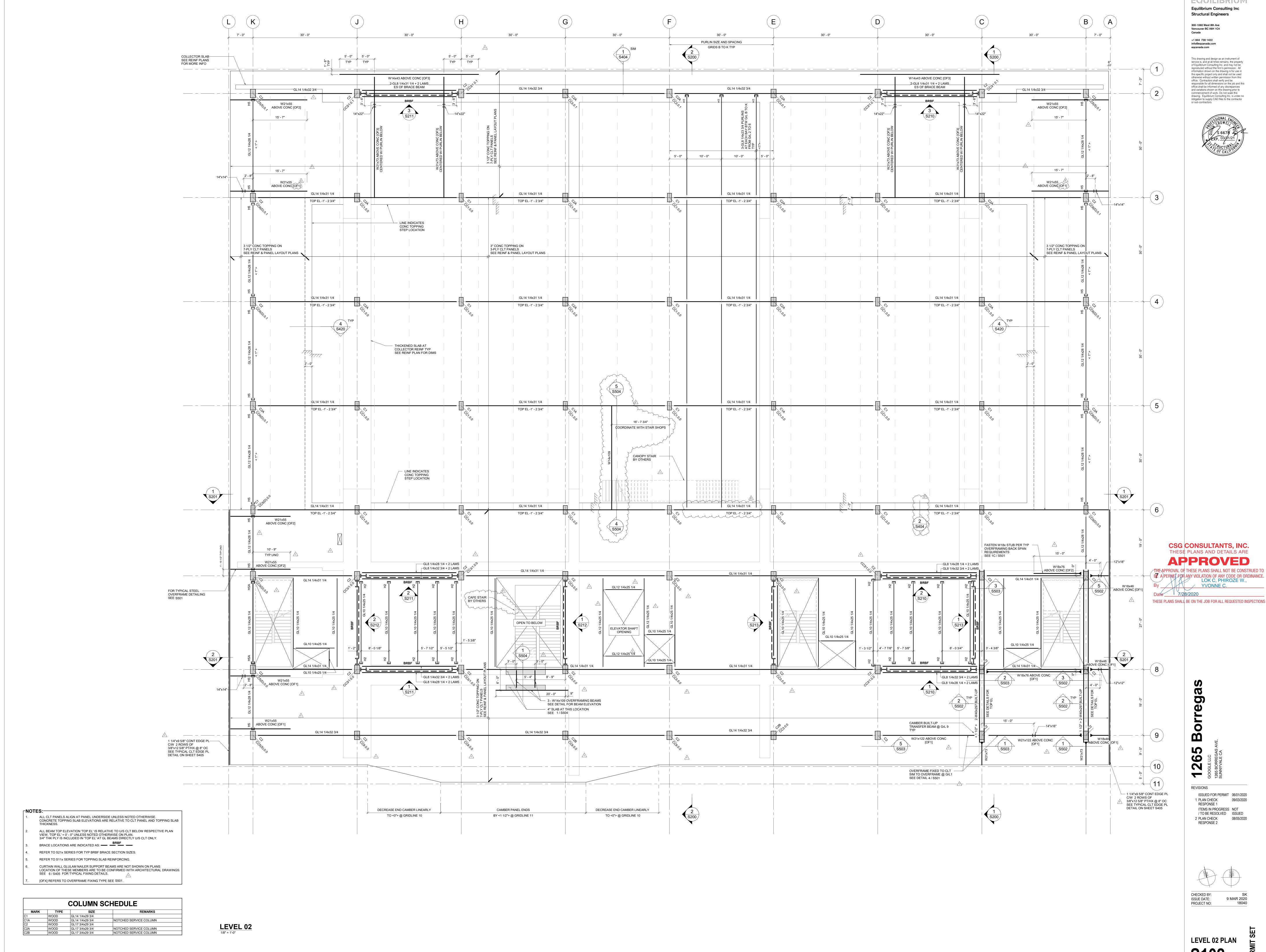
2 PLAN CHECK RESPONSE 2

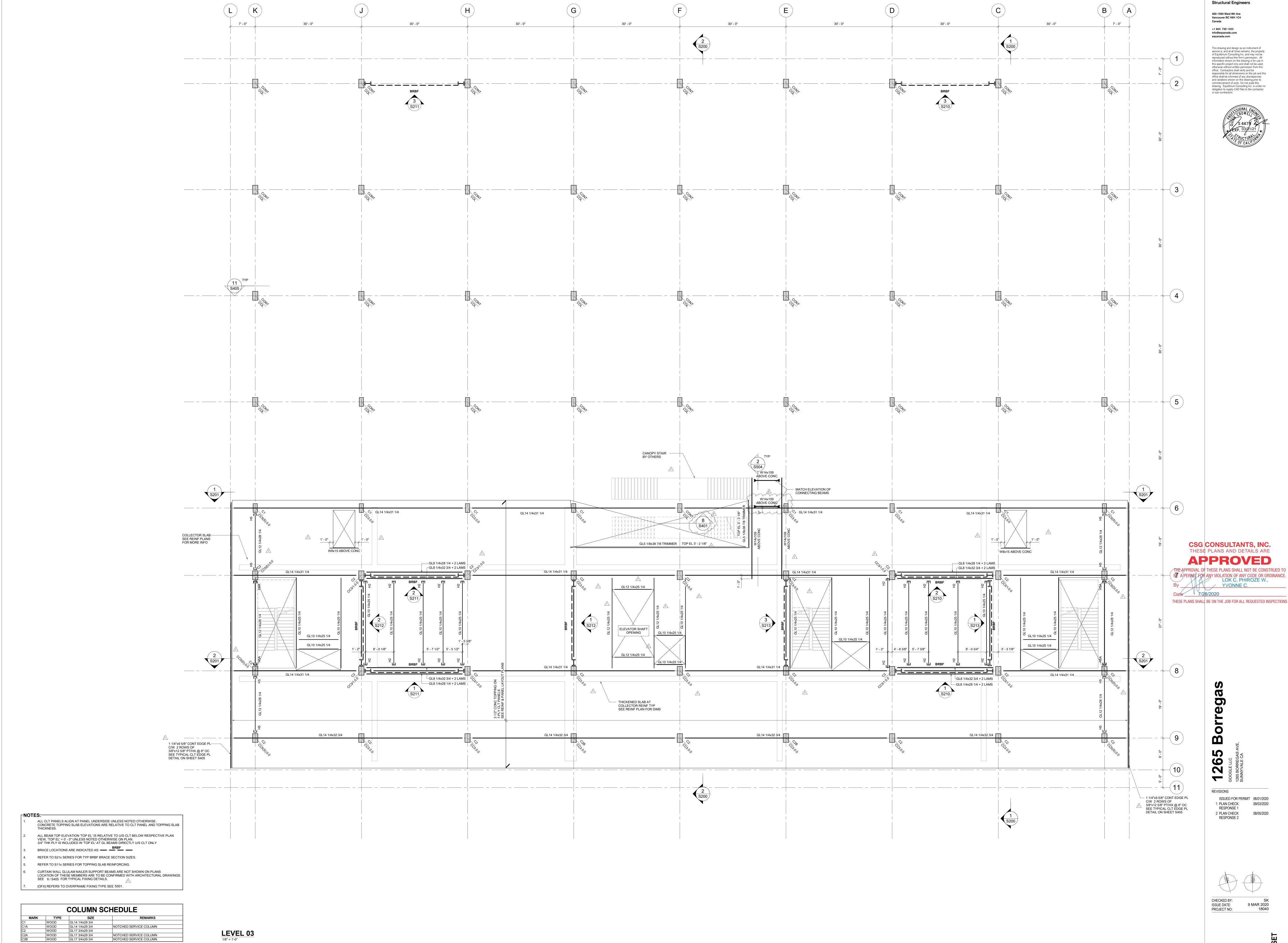


STRUCTURAL LOAD MAPS

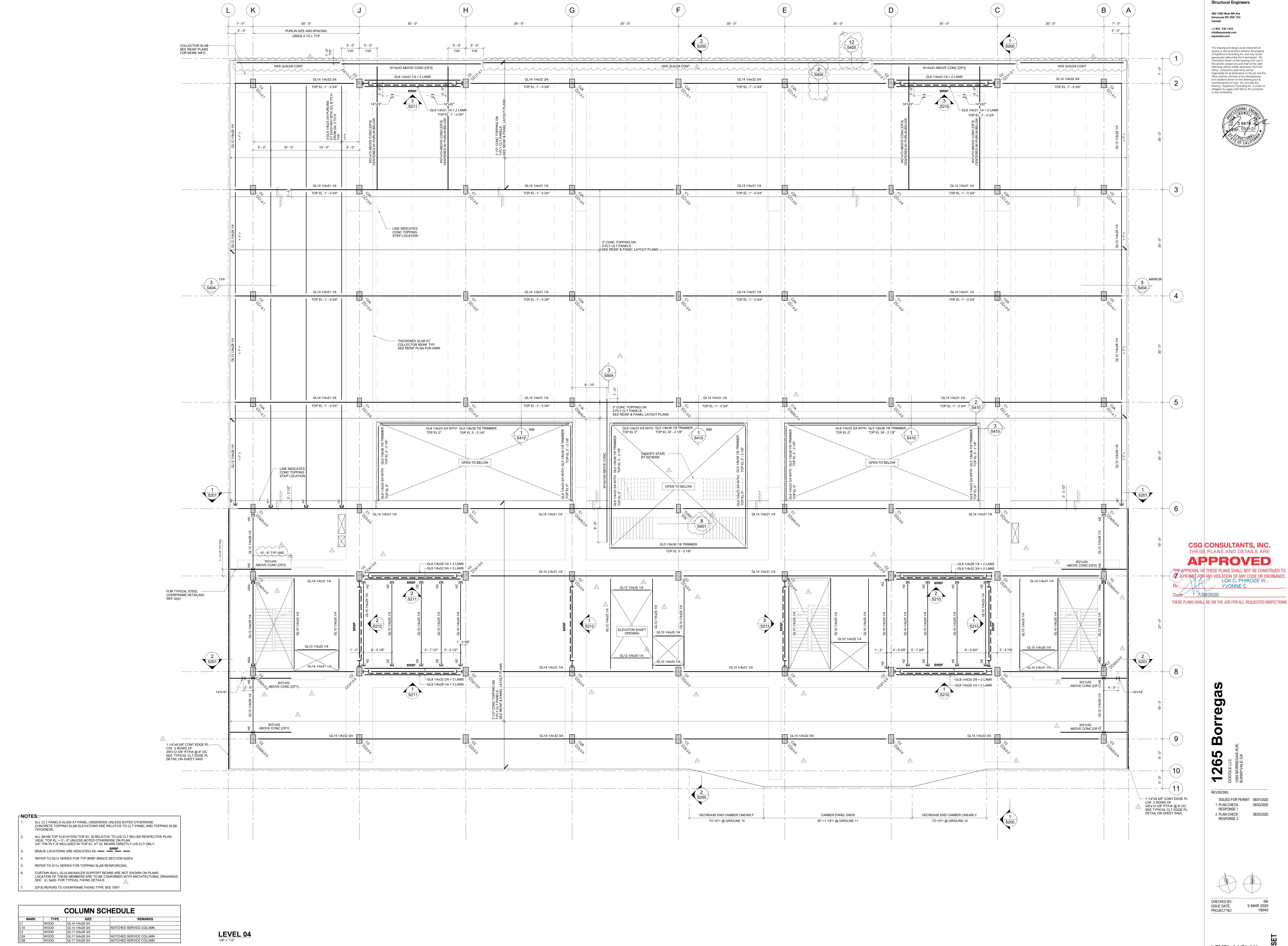


FOUNDATION / LEVEL 01 PLAN S101



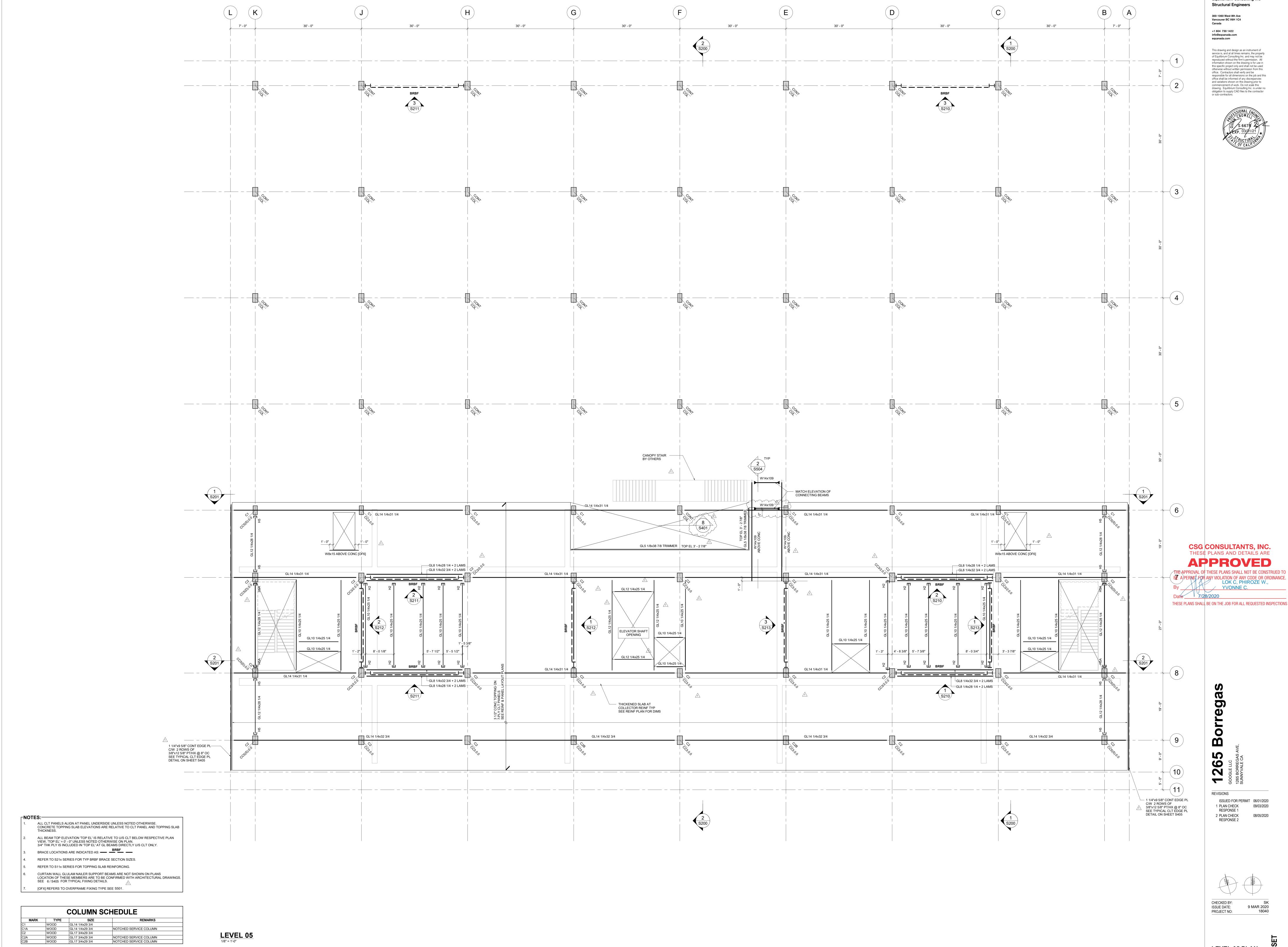


LEVEL 03 PLAN

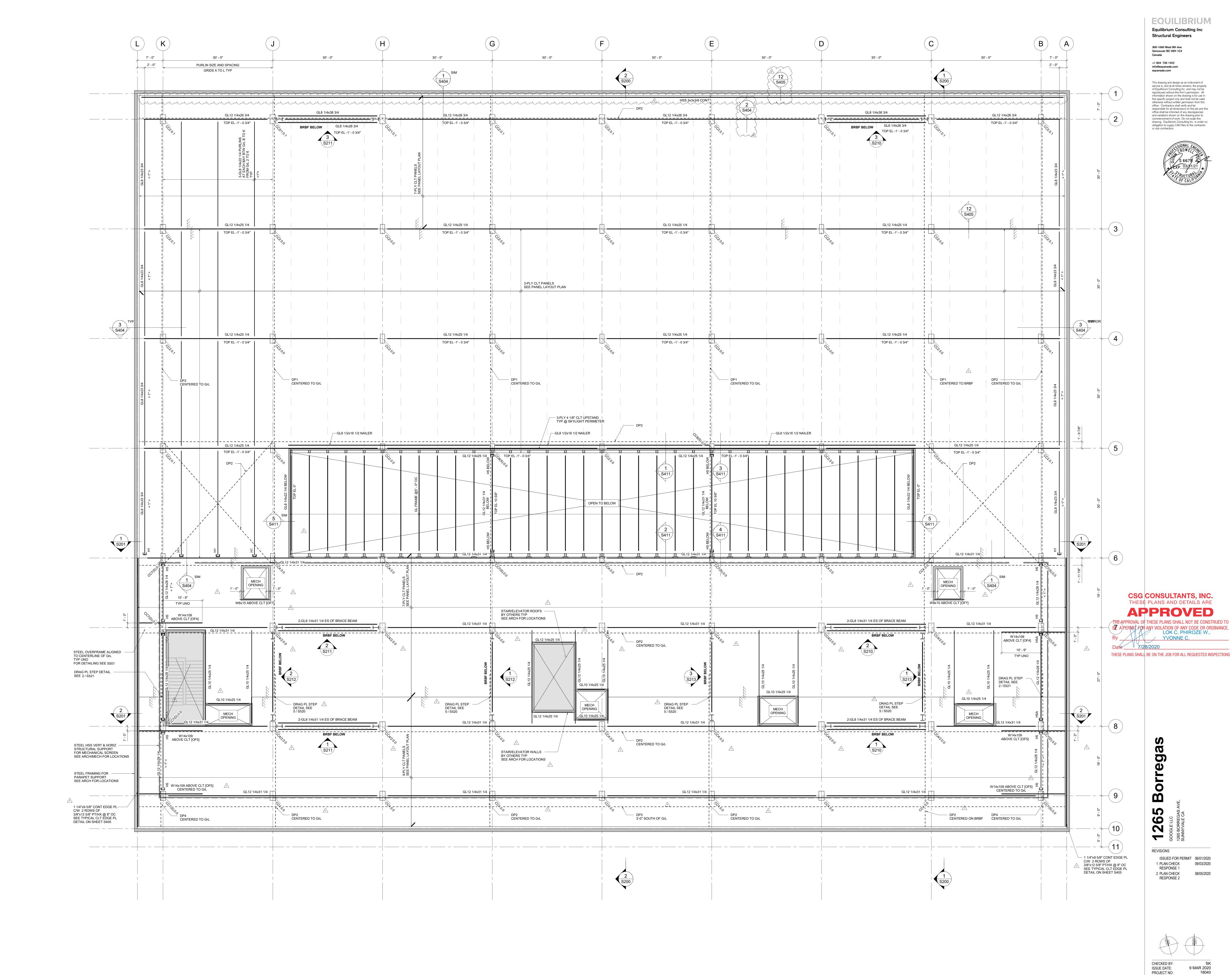


LEVEL 04 PLAN

Equilibrium Consulting Inc



LEVEL 05 PLAN



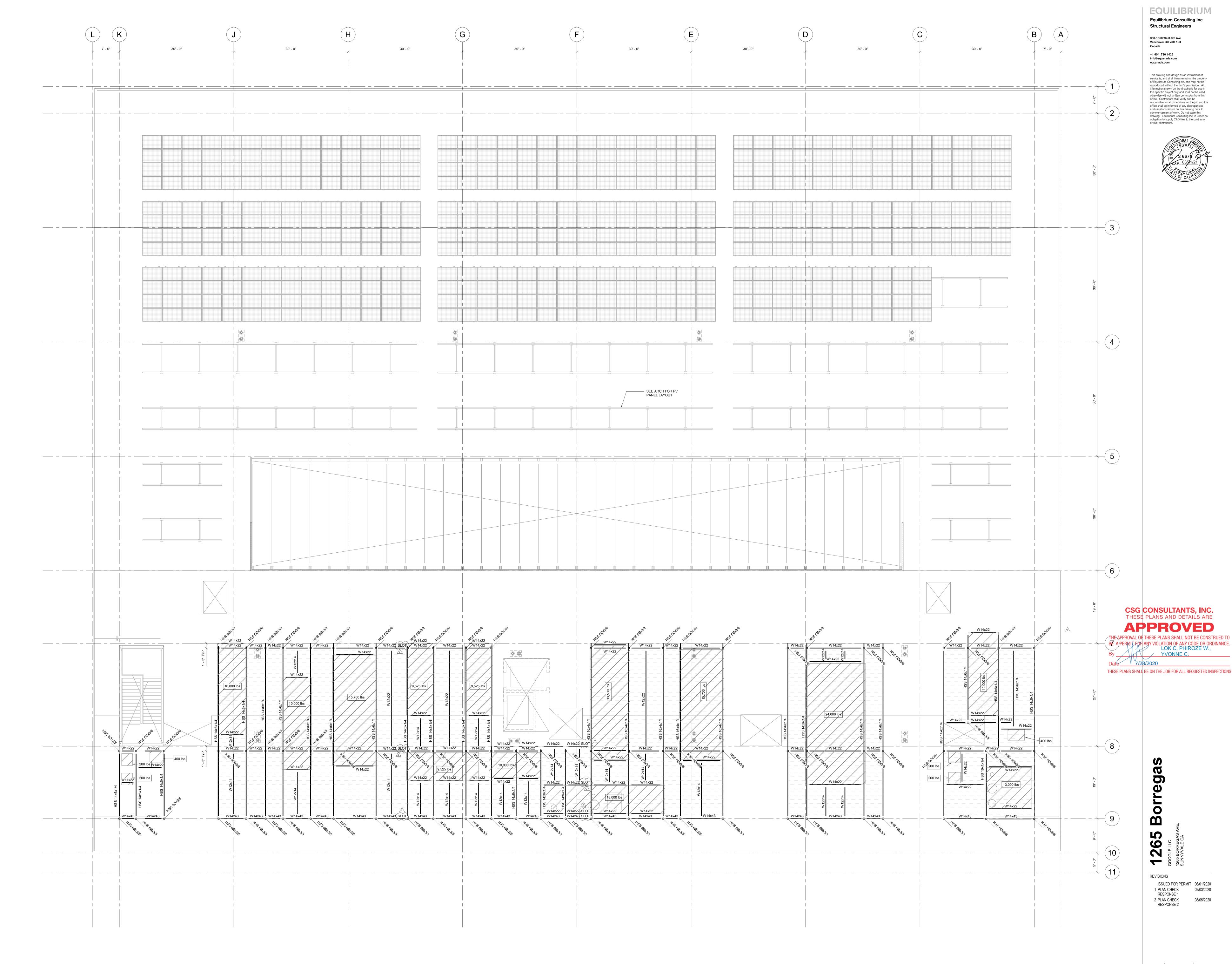
NOTES:

--- DENOTES DRAG PLATE ON PLAN
FOR MORE INFORMATION SEE SHEET S521

1. [OFX] REFERS TO OVERFRAME FIXING TYPE SEE S501.

ROOF PLAN1/8" = 1'-0"

ROOF PLAN



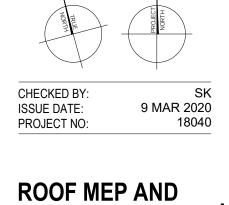
ALL W12 BEAMS HAVE SHEAR CONNECTION PER 6 / S800 ON THIS PLAN.

ALL W14 AND HSS14 BEAMS HAVE MOMENT CONNECTION PER 1 OR 5 / S800 ON THIS PLAN UNLESS NOTED OTHERWISE. MOMENT CONNECTION SYMBOL OMITTED FOR CLARITY.

FINAL COORDINATION OF STEEL FRAMING ELEMENTS SUPPORTING MECHANICAL UNITS IS BY CONTRACTOR. COORDINATE FRAMING WITH SPECIFIC UNIT GEOMETRIES AND CONNECTION DETAILS.

W14 AT CONDITIONS MARKED AS "SLOT" HAVE SHEAR CONNECTIONS PER 7 / S800. (2)

ROOF MEP AND PV SUPPORT FRAMING PLAN

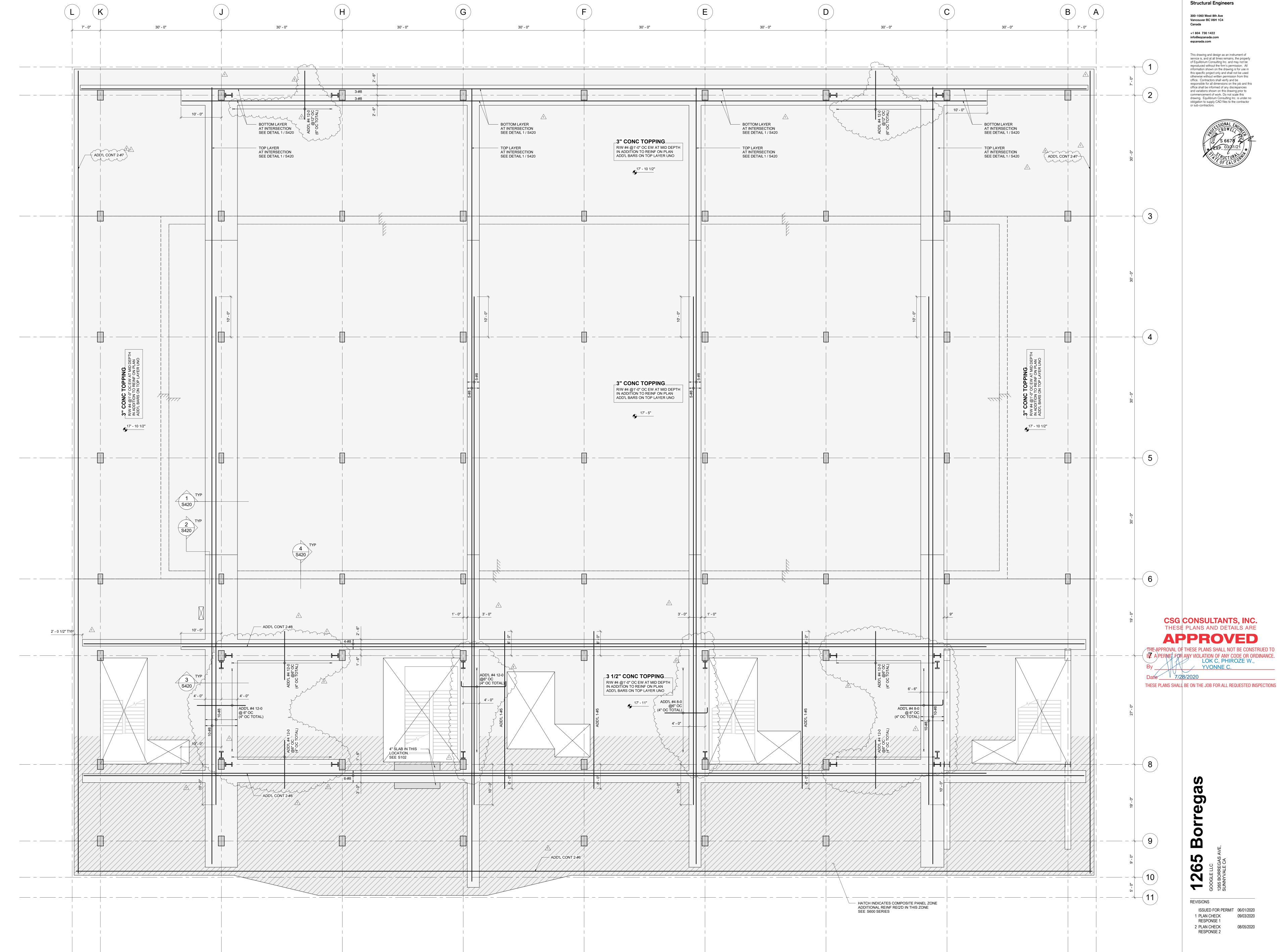


PV SUPPORT

FRAMING PLAN

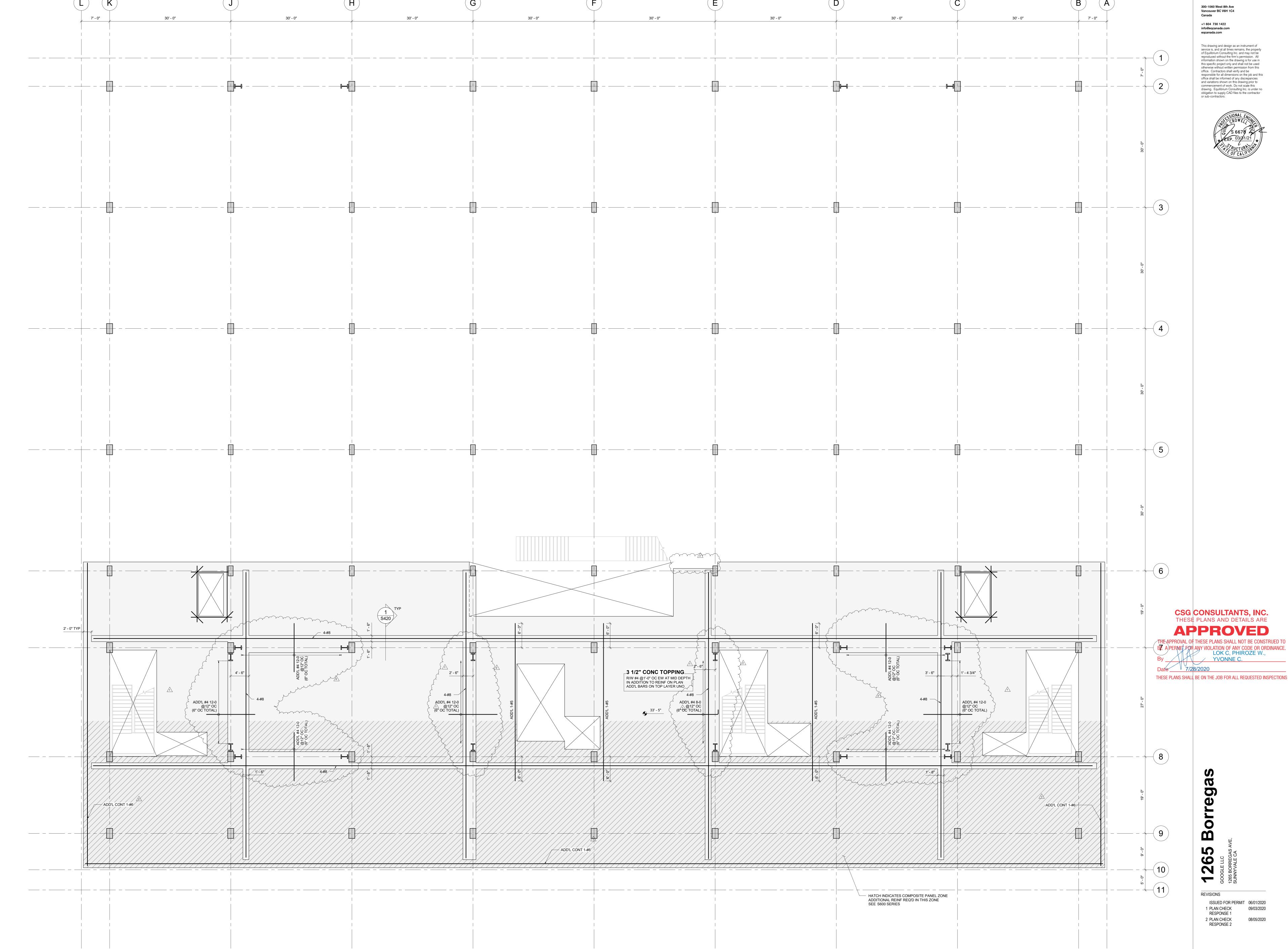
300-1060 West 8th Ave Vancouver BC V6H 1C4 Canada 7' - 0" 7' - 0" 30' - 0" 30' - 0" 30' - 0" 30' - 0" 30' - 0" 30' - 0" 30' - 0" +1 604 730 1422 info@eqcanada.com eqcanada.com This drawing and design as an instrument of service is, and at all times remains, the property of Equilibrium Consulting Inc. and may not be reproduced without the firm's permission. All information shown on the drawing is for use in this specific project only and shall not be used otherwise without written permission from this office. Contractors shall verify and be responsible for all dimensions on the job and this office shall be informed of any discrepancies. office shall be informed of any discrepancies and variations shown on this drawing prior to commencement of work. Do not scale this drawing. Equilibrium Consulting Inc. is under no obligation to supply CAD files to the contractor or sub-contractors. - ADD'L 8-#4 20'-0" LG @12" OC TOP EW UNO DISTRIBUTE EA SIDE OF COLUMN TYP AT GRID INTERSECTION
HOOK WHERE INTERRUPTED BY SLAB EDGE -

Equilibrium Consulting Inc Structural Engineers

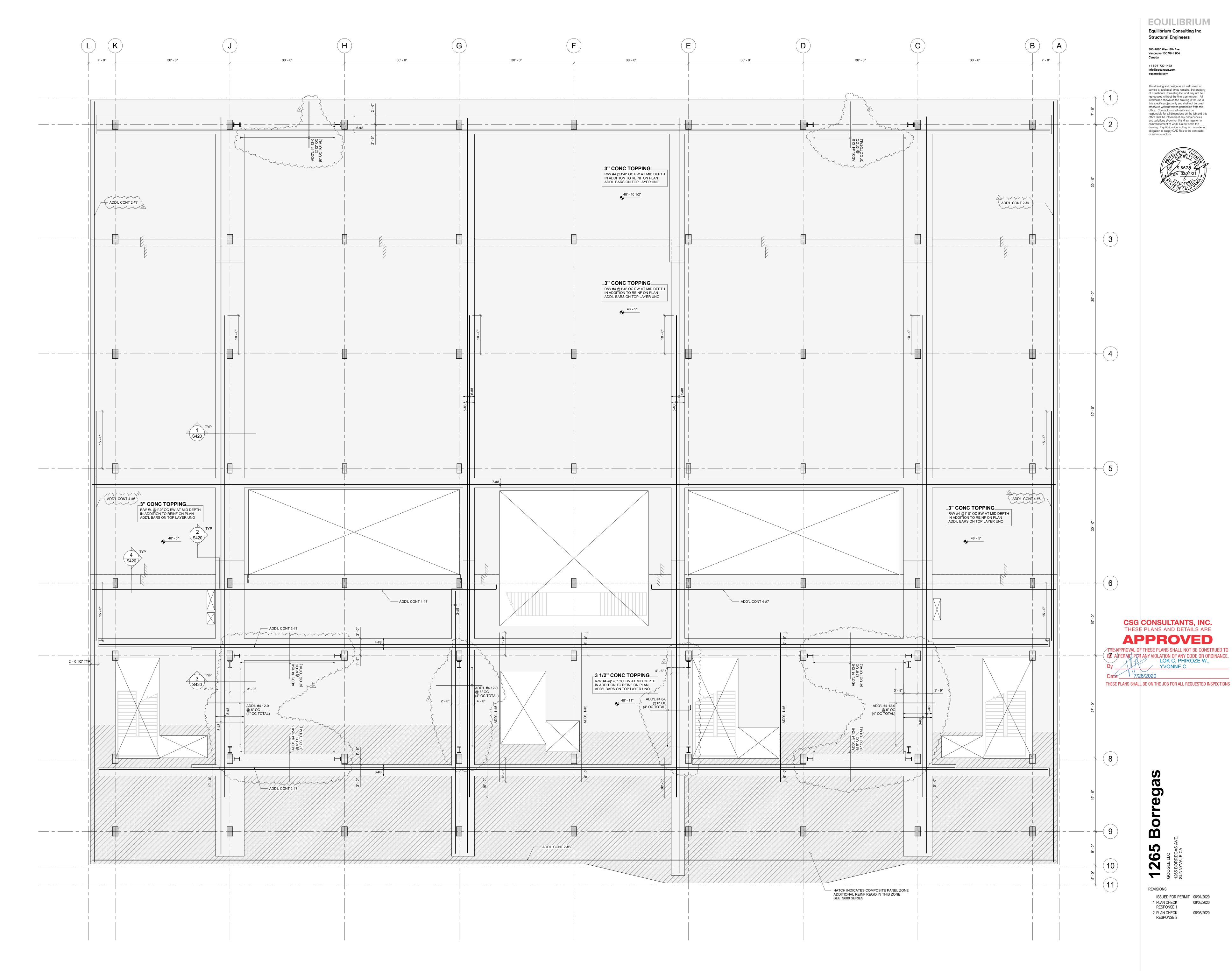


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9 MAR 2020 18040



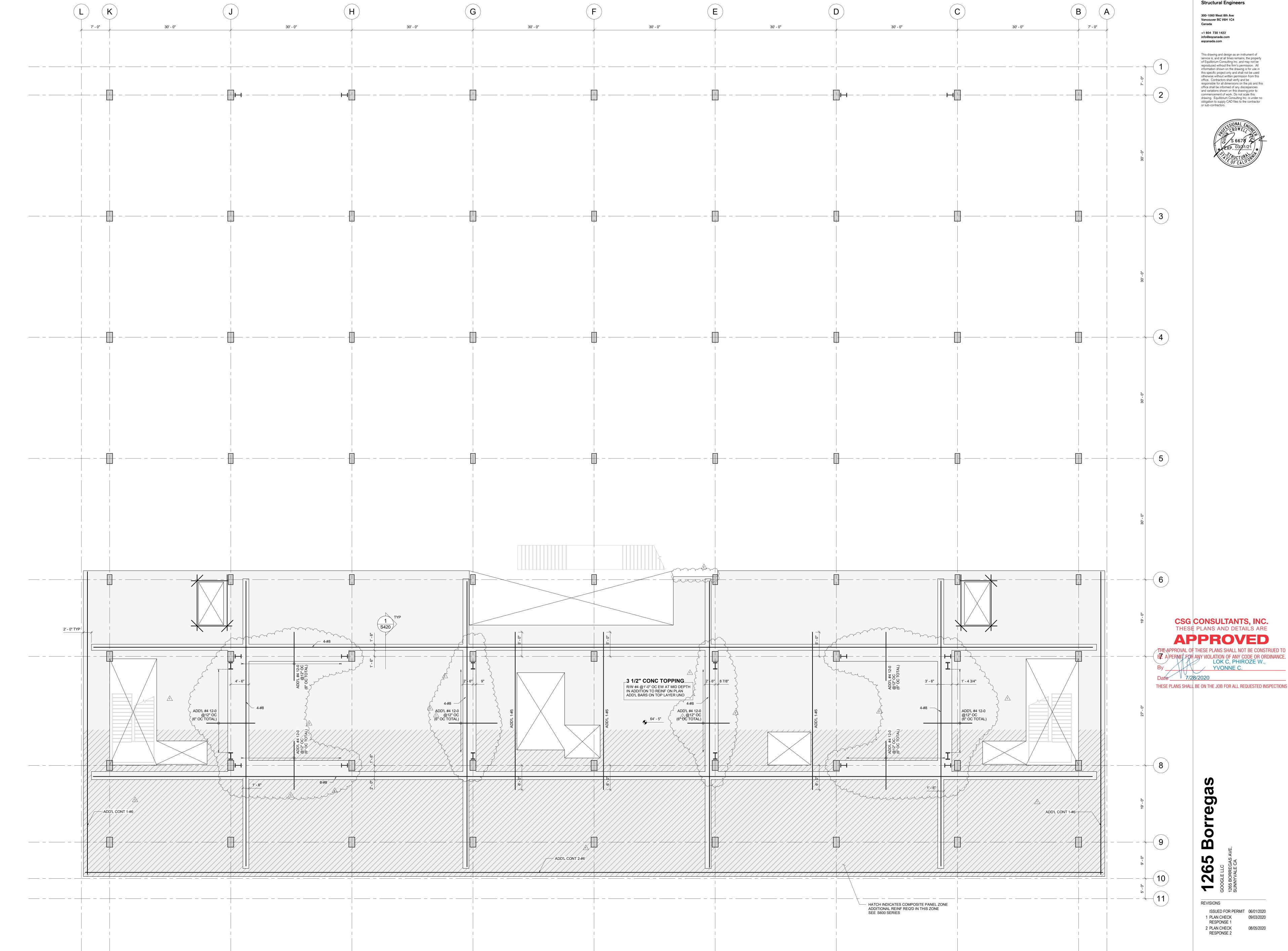
Structural Engineers

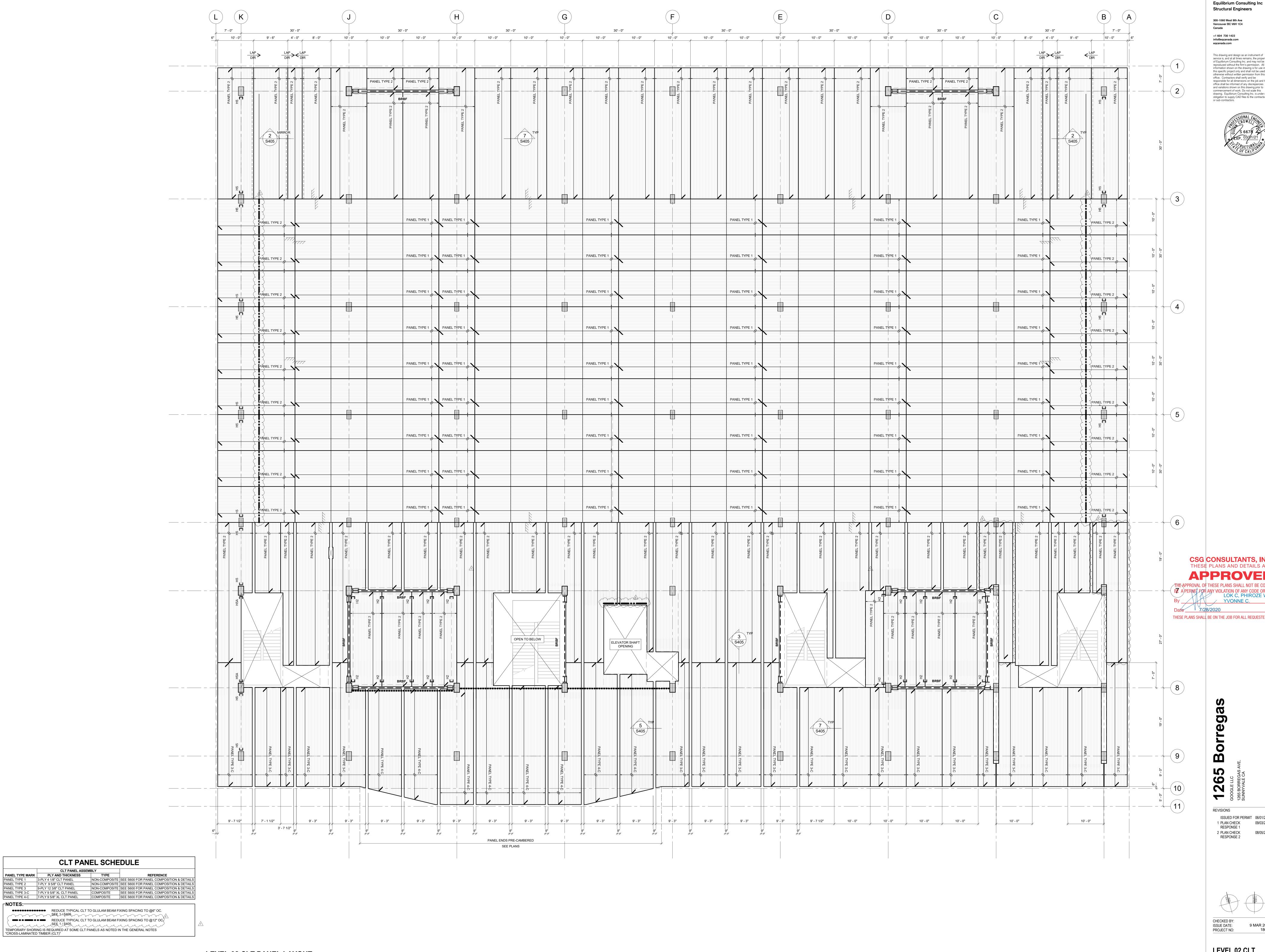


CHECKED BY: SK ISSUE DATE: 9 MAR 2020 PROJECT NO: 18040

LEVEL 04 REINF PLAN S114

SK 9 MAR 2020 18040





LEVEL 02 CLT PANEL LAYOUT

1/8" = 1'-0"

"CROSS-LAMINATED TIMBER (CLT)"

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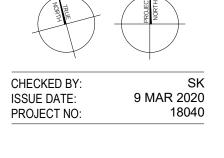


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LOK C, PHIROZE W.,

YVONNE C. THESE PLANS SHALL BE ON THE JOB FOR ALL REQUESTED INSPECTIONS

REVISIONS ISSUED FOR PERMIT 06/01/2020 1 PLAN CHECK RESPONSE 1 2 PLAN CHECK RESPONSE 2



LEVEL 02 CLT PANEL LAYOUT PLAN

PLAN

"CROSS-LAMINATED TIMBER (CLT)"

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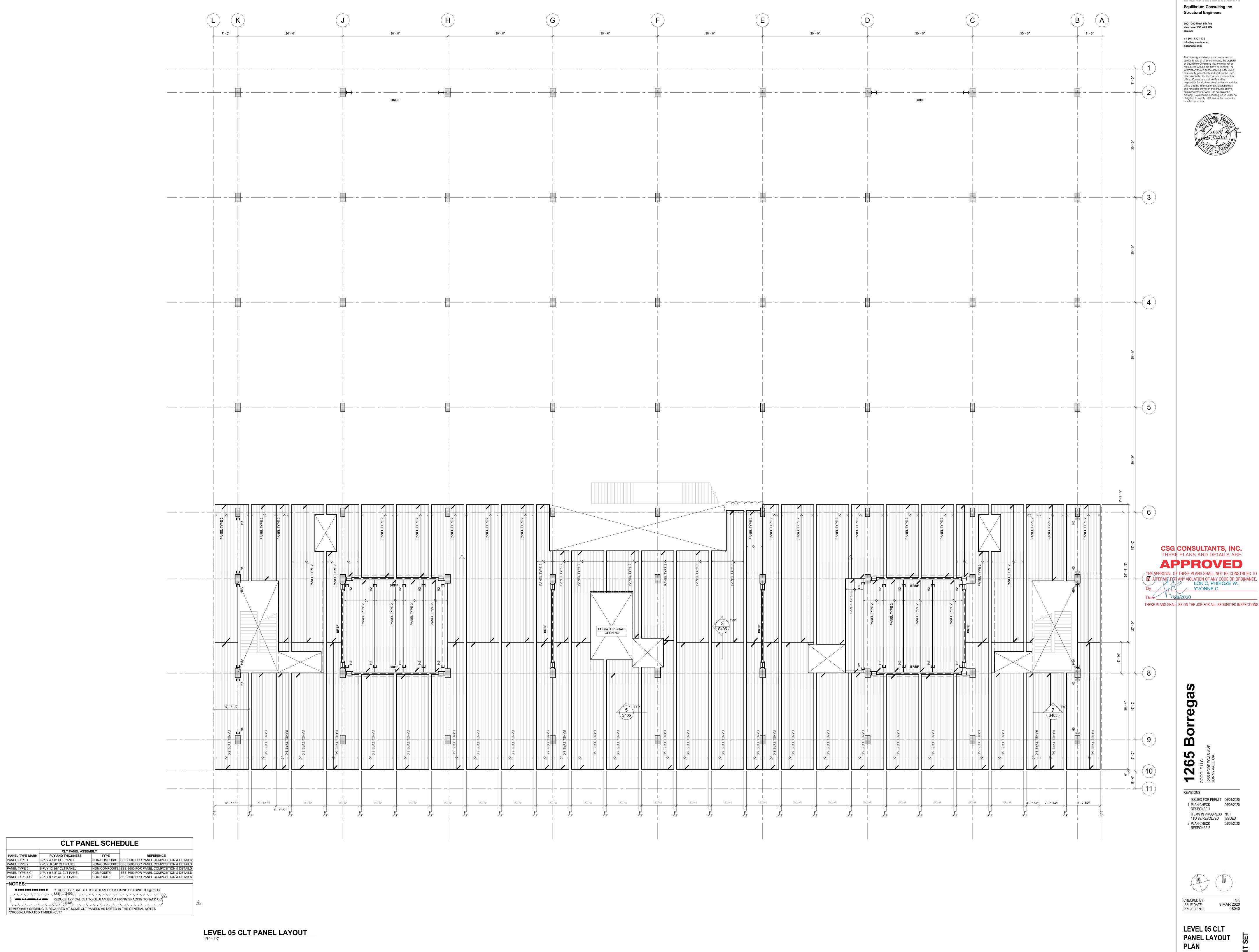


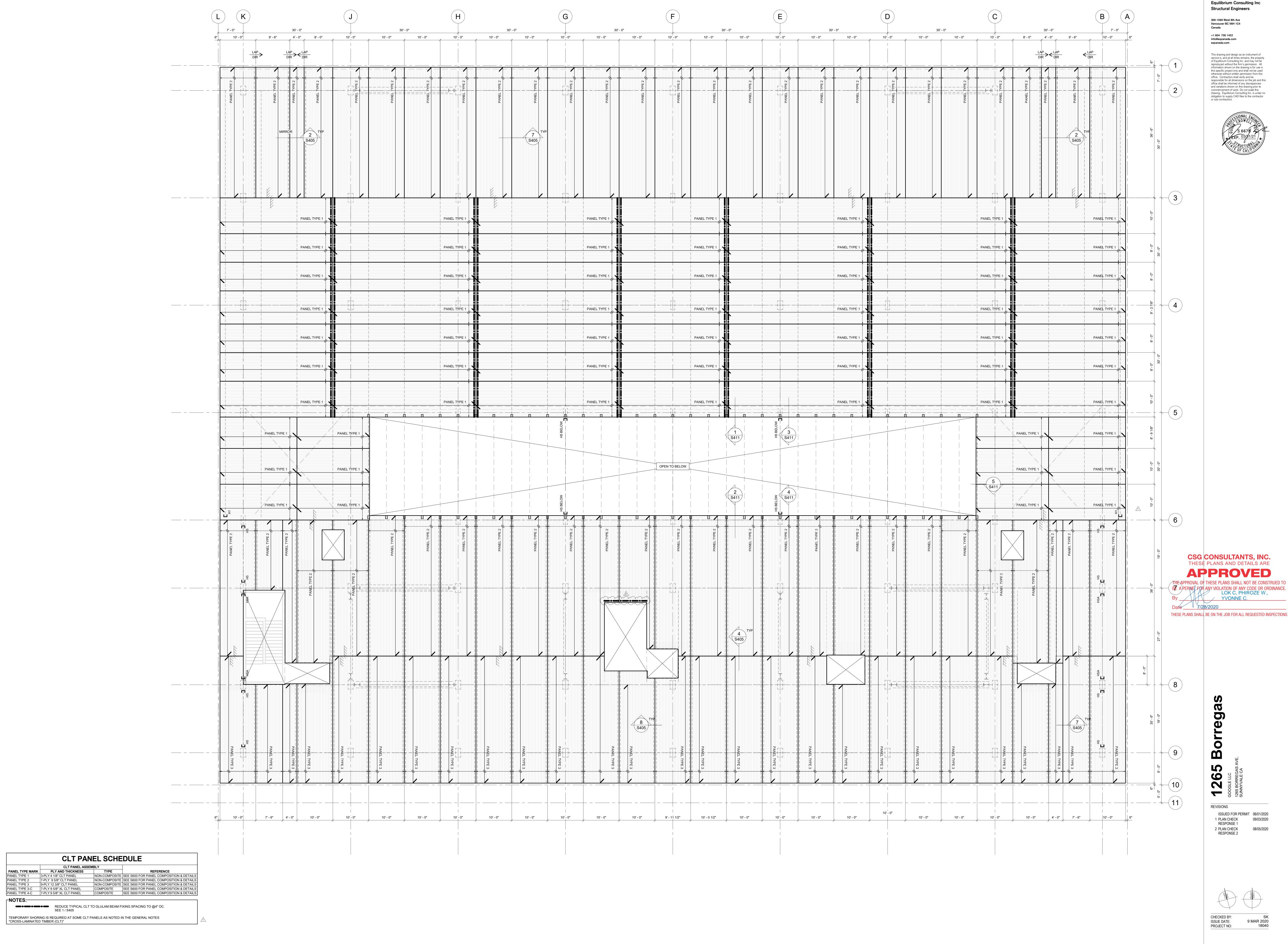
ISSUE DATE: 9 MAR 2020 PROJECT NO: **LEVEL 04 CLT**

ISSUED FOR PERMIT 06/01/2020

1 PLAN CHECK RESPONSE 1 2 PLAN CHECK RESPONSE 2

PANEL LAYOUT PLAN





ROOF PLAN1/8" = 1'-0"

ROOF CLT PANEL LAYOUT PLAN

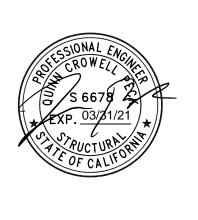
S126

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LOK C, PHIROZE W.,
YVONNE C.

Date 7/28/2020

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1265 Borregas GOOGLE LLC 1265 BORREGAS AVE, SUNNYVALE CA

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1 PLAN CHECK 09/03/2020
RESPONSE 1

CHECKED BY: SK
ISSUE DATE: 9 MAR 2020
PROJECT NO: 18040

FULL BUILDING SECTIONS
S200

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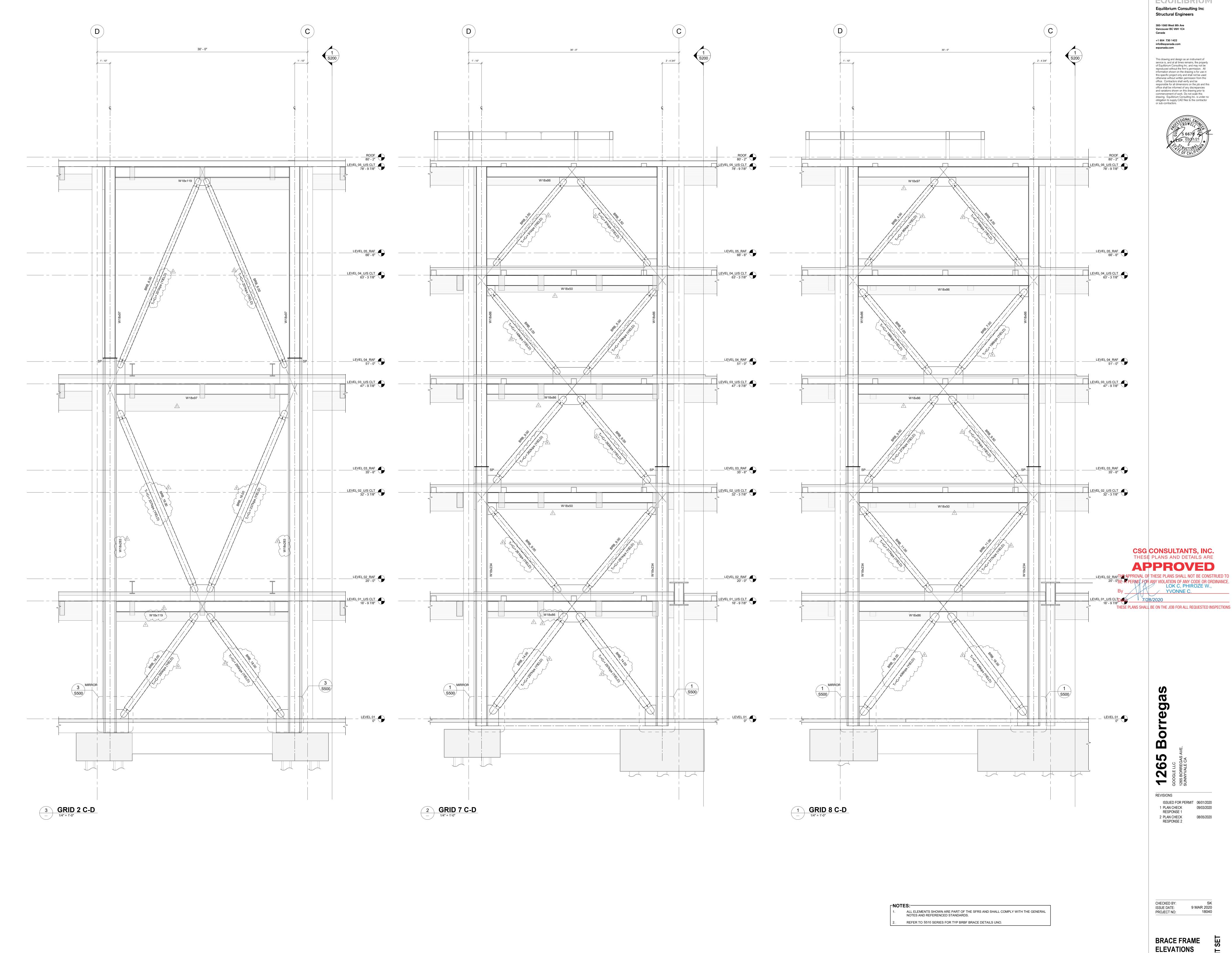
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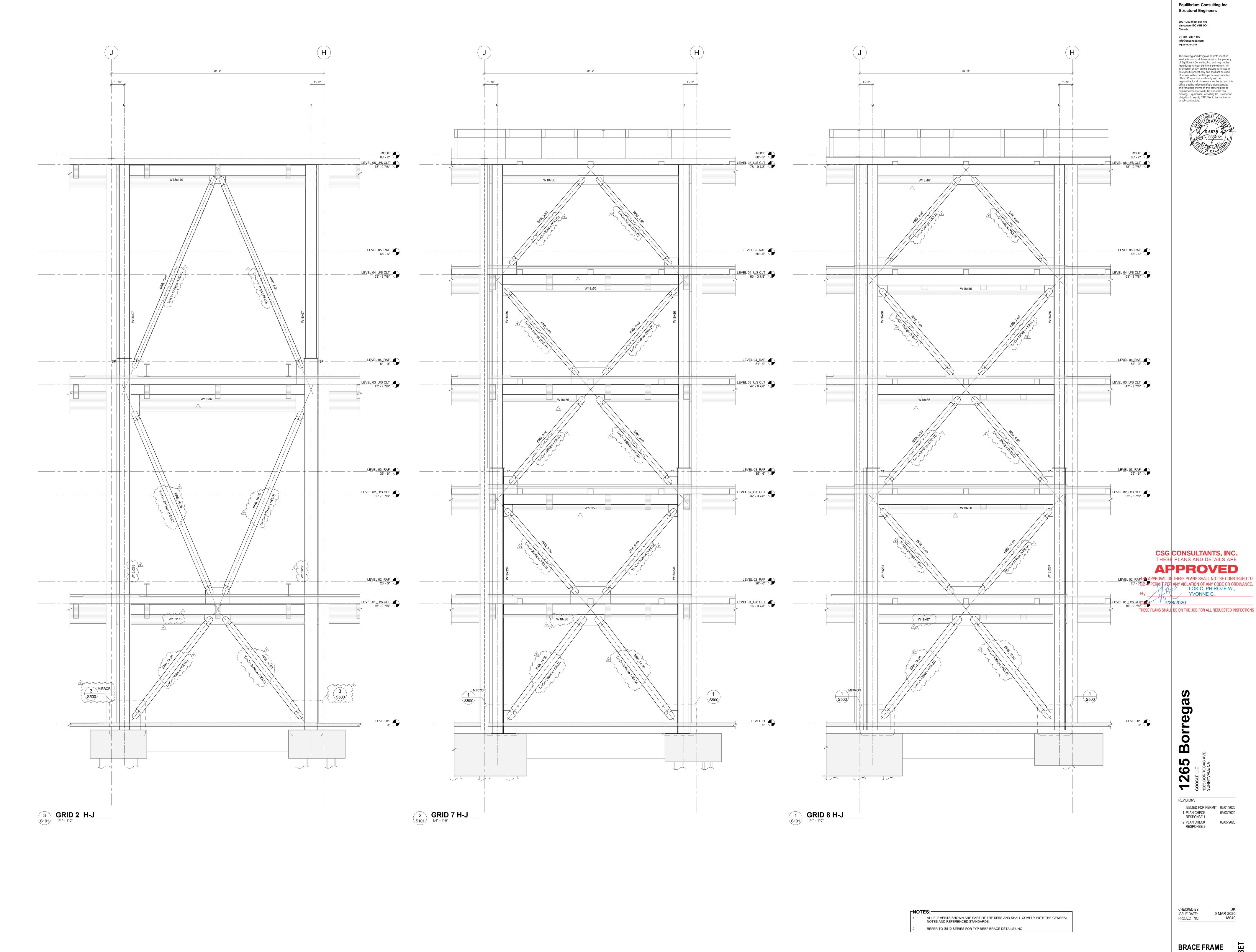
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1 PLAN CHECK 09/03/2020
RESPONSE 1

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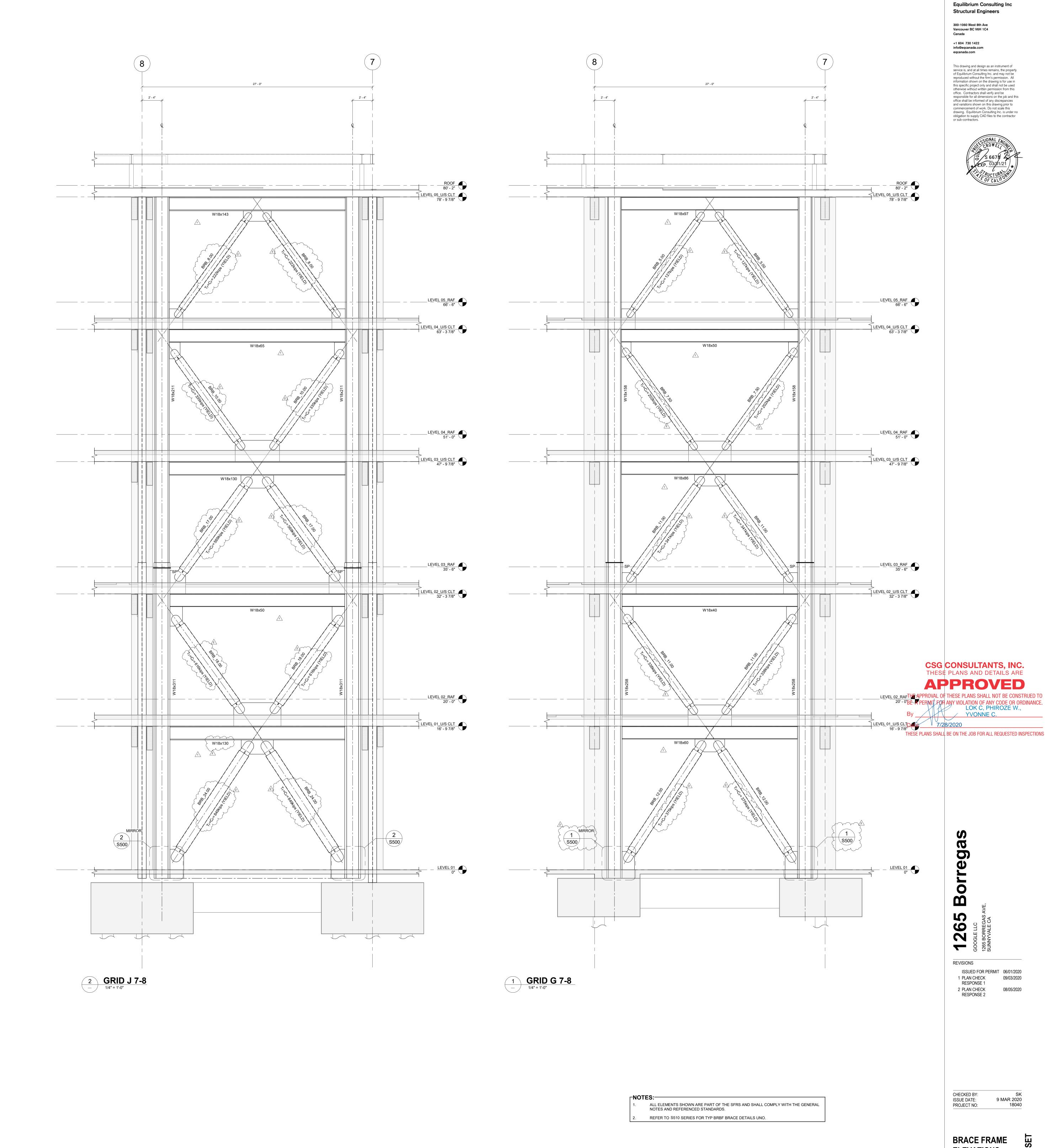
FULL BUILDING



ELEVATIONS

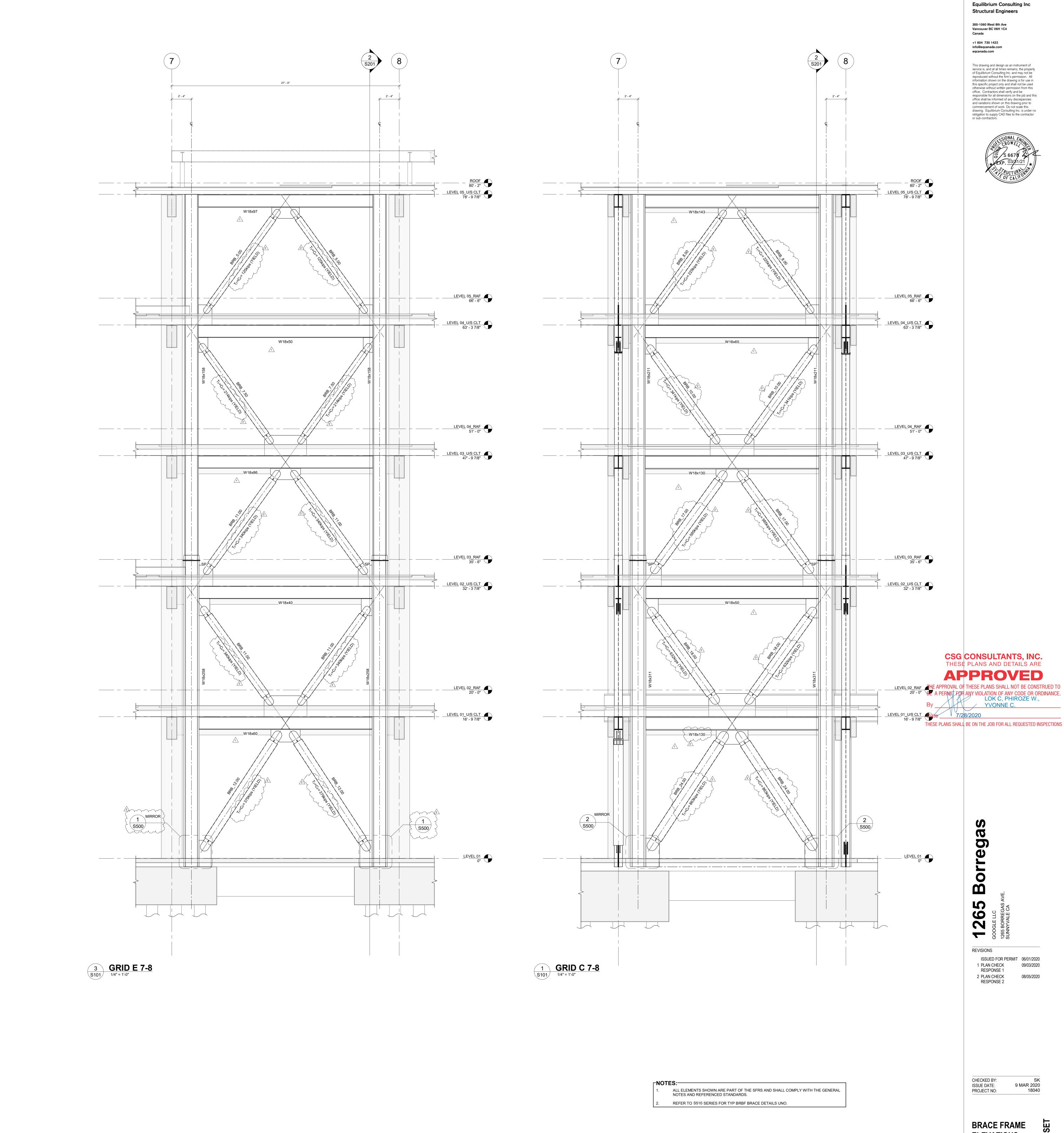


ELEVATIONS



BRACE FRAME ELEVATIONS

S212

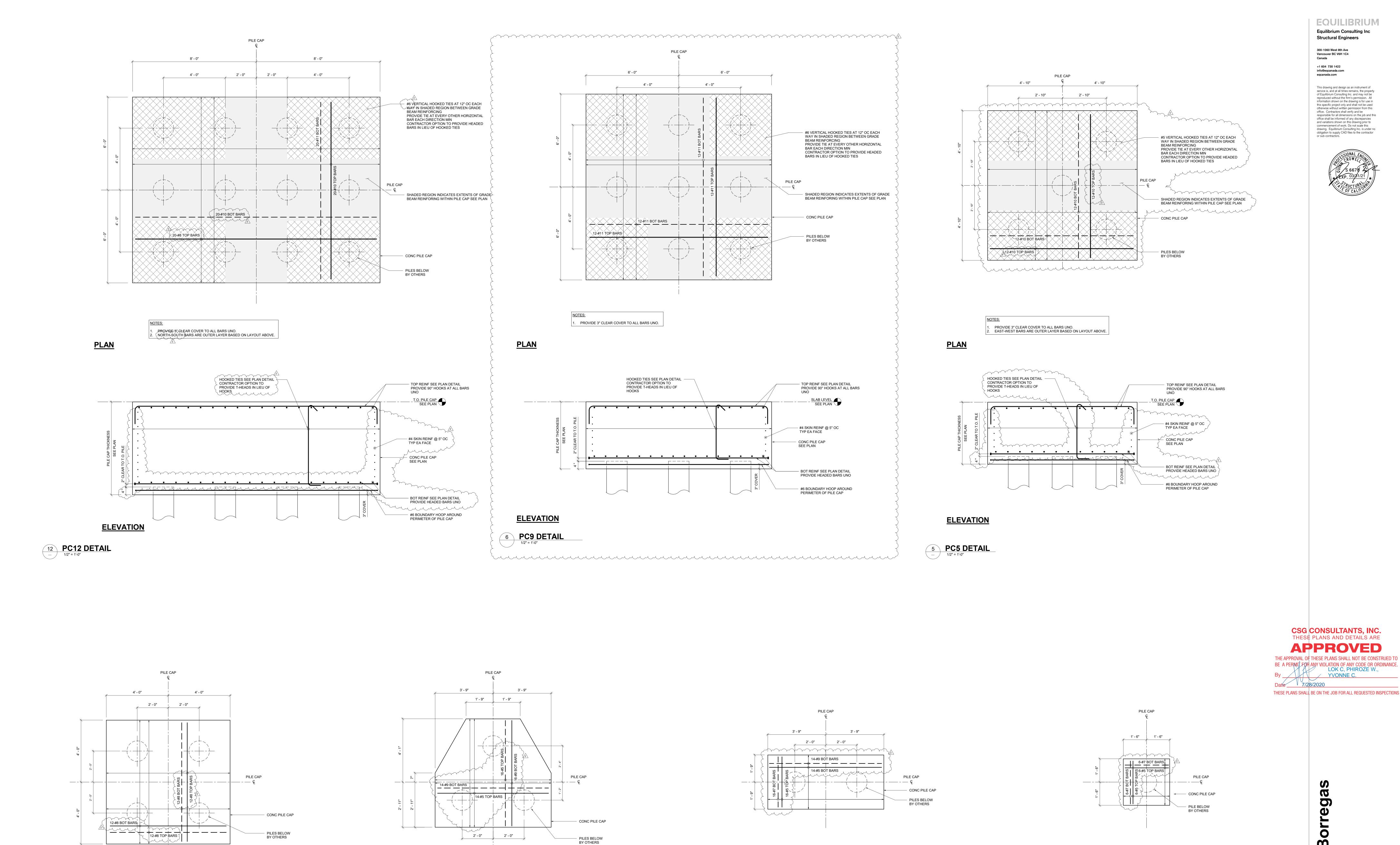


09/03/2020 08/05/2020

EQUILIBRIUM

9 MAR 2020 18040

ELEVATIONS



NOTE:

ELEVATION

2 PC2 DETAIL
- 1/2" = 1'-0"

PROVIDE 3" CLEAR COVER TO ALL BARS UNO.

EAST-WEST BARS ARE OUTER LAYER BASED ON LAYOUT ABOVE. MAINTAIN

RELATIONSHIP BETWEEN BARS WHEN PILE CAP IS ROTATED ON PLAN.

- #4 SKIN REINF @ 5" OC

- BOT REINF SEE PLAN DETAIL

#6 BOUNDARY HOOP AROUND

PERIMETER OF PILE CAP

PROVIDE HEADED BARS UNO

TYP EA FACE

- CONC PILE CAP

SEE PLAN

NOTES:

ELEVATION

3 **PC3 DETAIL**- 1/2" = 1'-0"

PROVIDE 3" CLEAR COVER TO ALL BARS UNO.

NORTH-SOUTH BARS ARE OUTER LAYER BASED ON LAYOUT ABOVE. MAINTAIN

— #4 SKIN REINF @ 5" OC

CONC PILE CAP

 \sim

- BOT REINF SEE PLAN DETAIL

PROVIDE HEADED BARS UNO

- #6 BOUNDARY HOOP AROUND

PERIMETER OF PILE CAP

SEE PLAN

TYP EA FACE

RELATIONSHIP BETWEEN BARS WHEN PILE CAP IS ROTATED ON PLAN.

PROVIDE 3" CLEAR COVER TO ALL BARS UNO.

CAPS DESIGNATED AS PC4*.

ELEVATION

4 **PC4 DETAIL**- 1/2" = 1'-0"

EAST-WEST BARS ARE OUTER LAYER BASED ON LAYOUT ABOVE.

PRÔVIDĚ #5 TOP REINF IN LIEÙ OF TOP REINF SHOWN AT PILE

TOP REINF SEE PLAN DETAIL

- #4 SKIN REINF @ 5" OC TYP EA FACE

- BOT REINF SEE PLAN DETAIL

PROVIDE HEADED BARS UNO

- #6 BOUNDARY HOOP AROUND

PERIMETER OF PILE CAP

munum.

CONC PILE CAP

SEE PLAN

PROVIDE 90° HOOKS AT ALL BARS

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2 PLAN CHECK

RESPONSE 2

ISSUE DATE:

PROJECT NO:

TYPICAL PILE

CAP DETAILS

9 MAR 2020

18040

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PROVIDE 3" CLEAR COVER TO ALL BARS UNO.

 $\sqrt{2}$

ELEVATION

1 PC1 DETAIL
- 1/2" = 1'-0"

EAST-WEST BARS ARE OUTER LAYER BASED ON LAYOUT ABOVE.

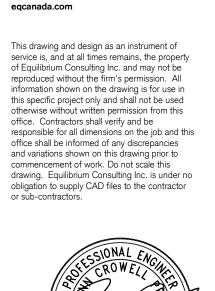
Market Ma

CONC PILE CAP

SEE PLAN

-- #4 SKIN REINF @ 5" OC TYP EA FACE

BOT REINF SEE PLAN DETAIL
PROVIDE HEADED BARS UNO



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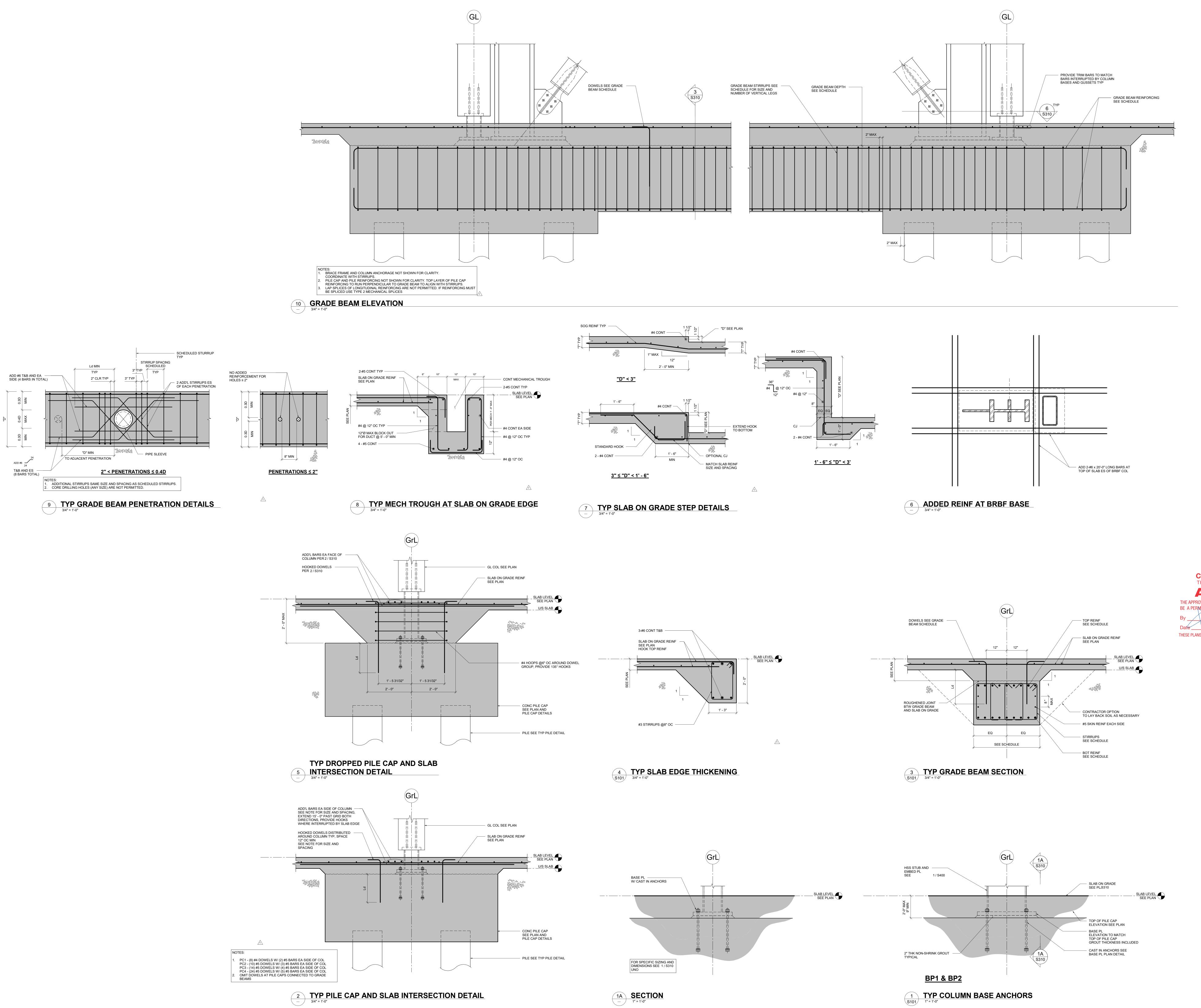
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TYPICAL PILE CAP DETAILS



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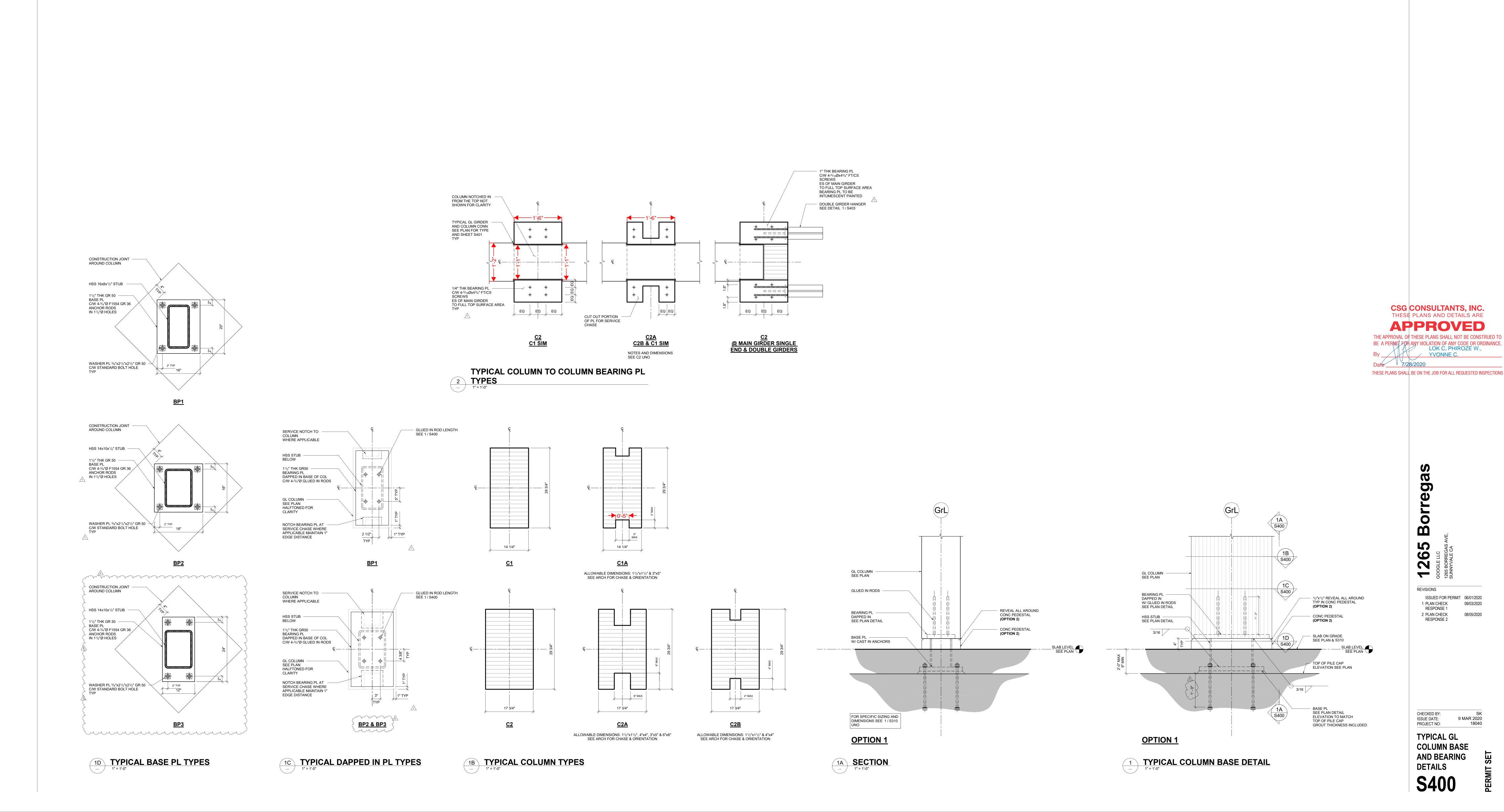
REVISIONS ISSUED FOR PERMIT 06/01/2020 1 PLAN CHECK RESPONSE 1

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TYPICAL FOUNDATION DETAILS

PROJECT NO:



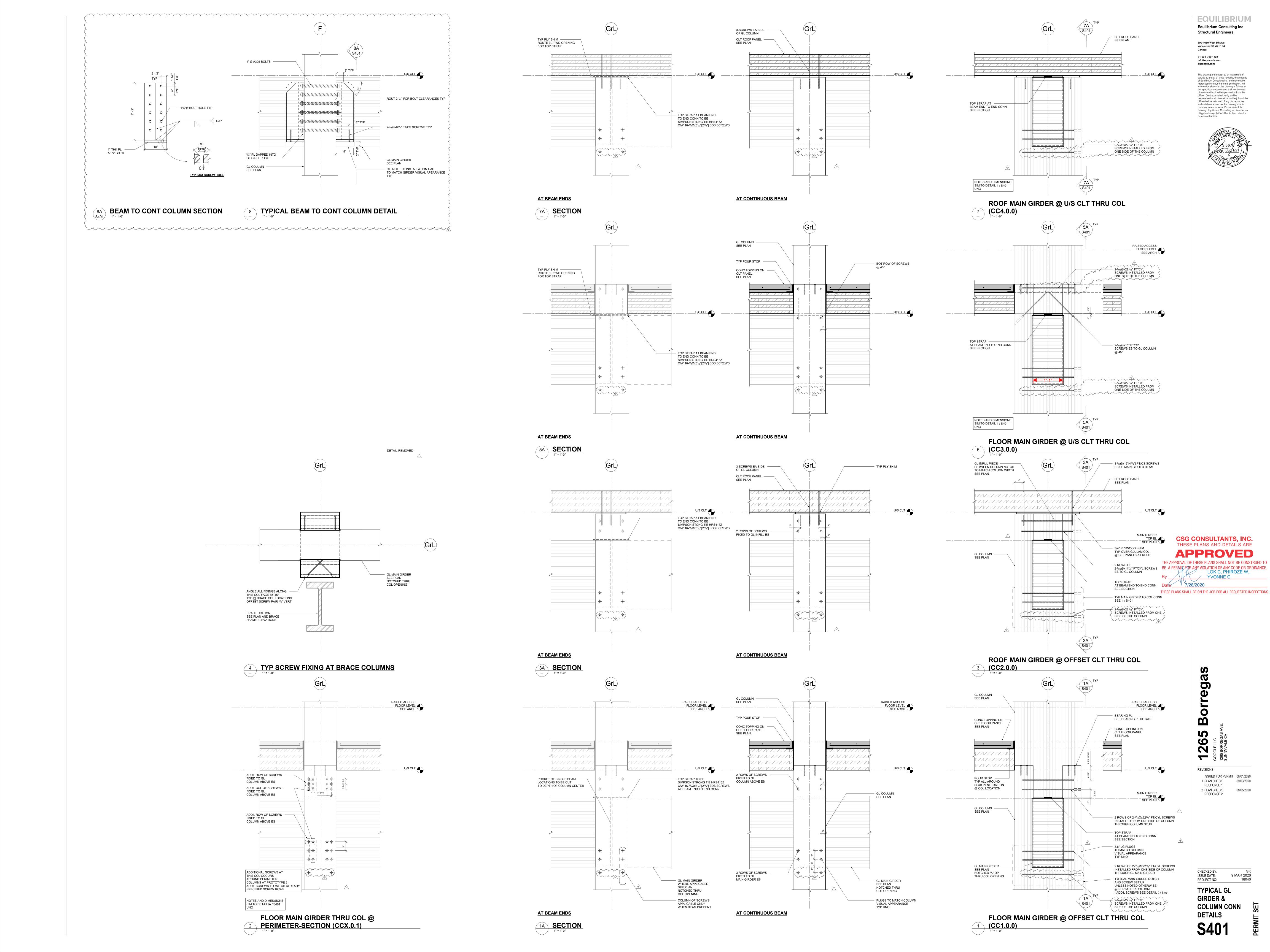


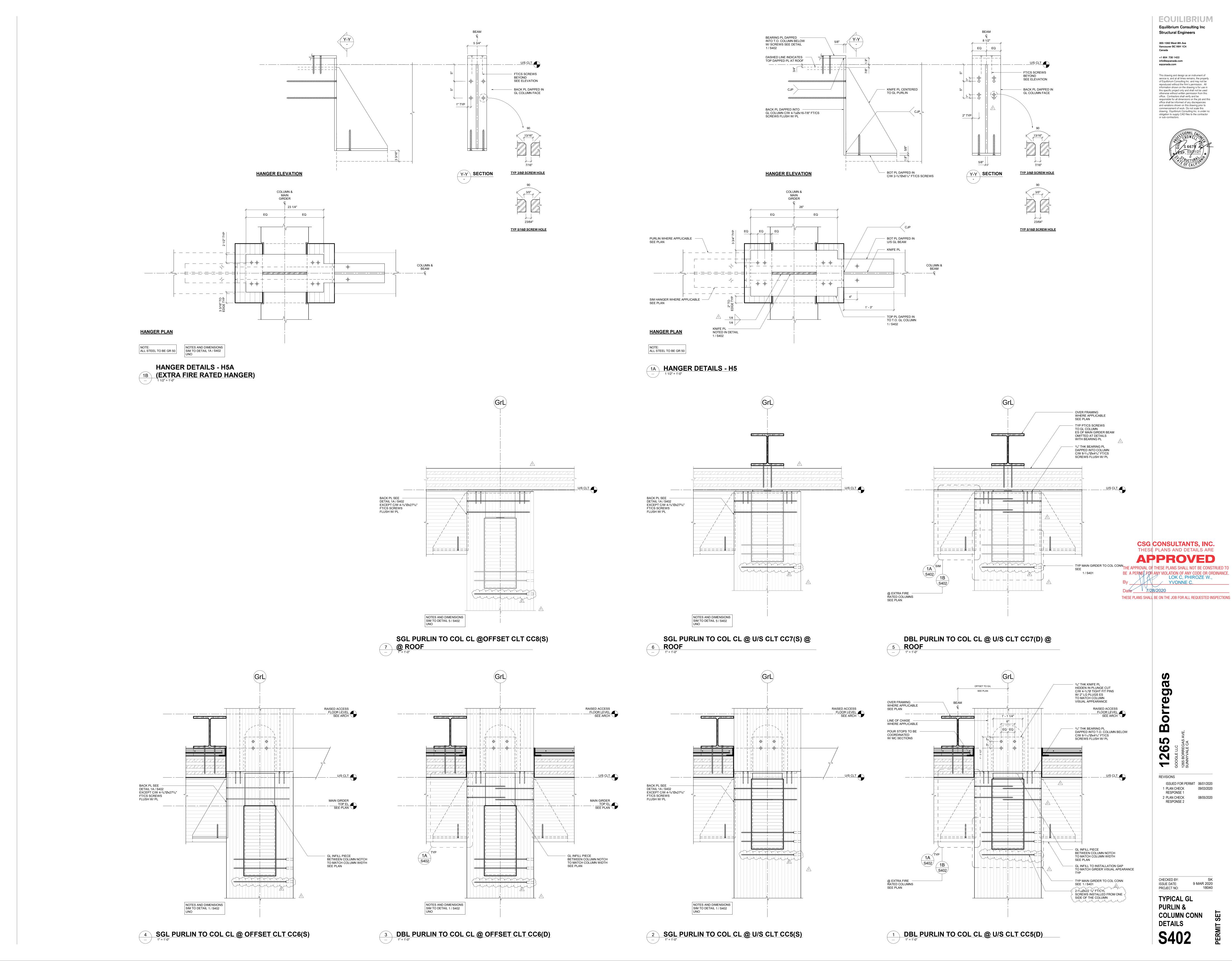
9 MAR 2020 18040

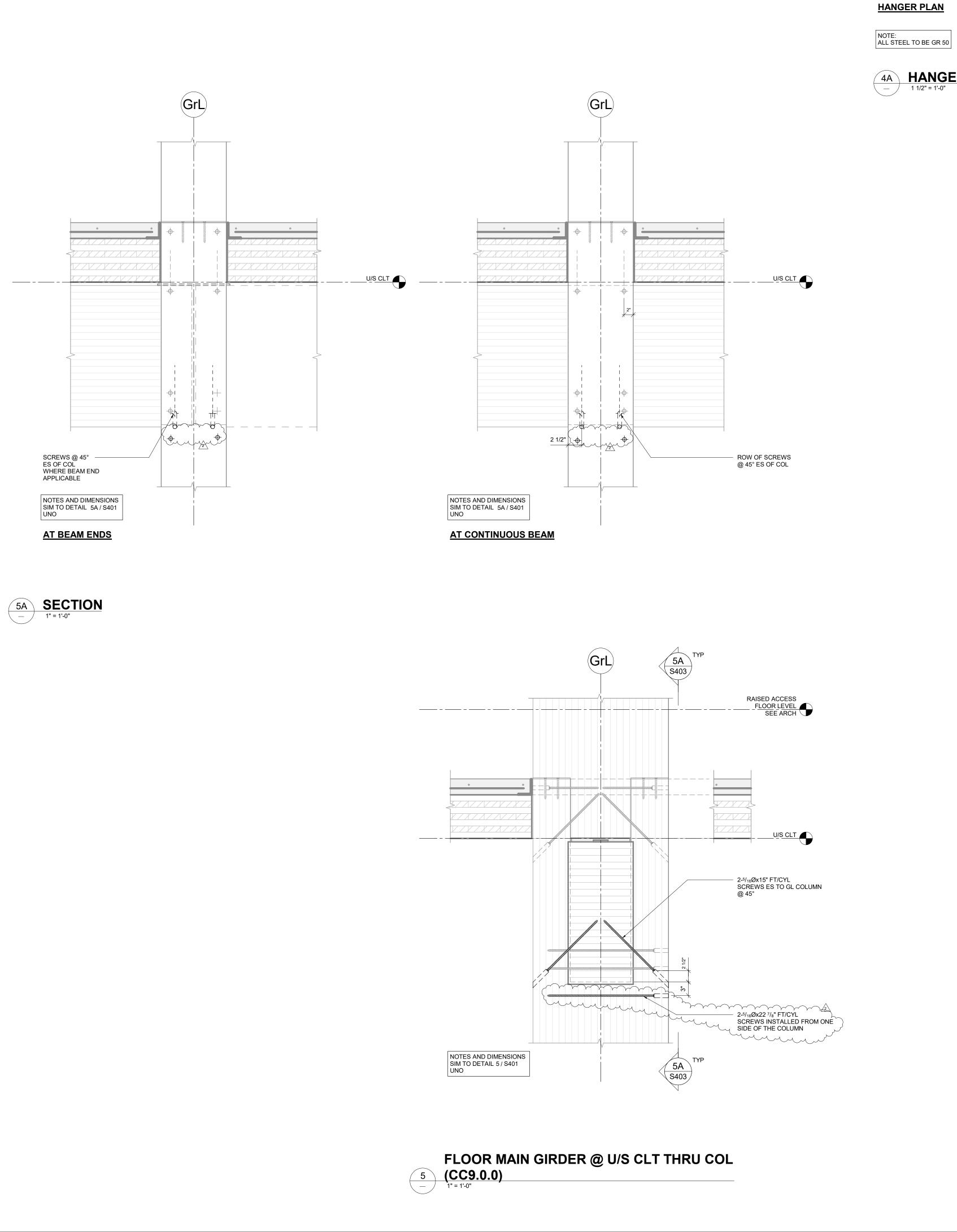


or sub-contractors.

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BEARING PL TO T.O. COLUMN
SEE 2 / S400

4-3/8"Øx117/8" FT/CS SCREWS @ 45°

4-³/₈"Øx11⁷/₈" FT/CS — SCREWS

KNIFE PL CENTERED TO GL BEAM

KNIFE PL CENTERED

BACK PL DAPPED INTO COL C/W 4-3/8"Øx117/8" FT/CS SCREWS FLUSH W/ PL @BOT

TO GL PURLIN



BEARING PL TO T.O. COLUMN

SEE 2 / S400 BEARING PL TO BE INTUMESCENT PAINTED

KNIFE PL CENTERED -TO GL BEAM

BACK PL DAPPED INTO COL C/W 6-3/8Øx11⁷/8" FT/CS SCREWS FLUSH W/ PL @TOP

C/W 2-3/8"Øx117/8" FT/CS SCREWS FLUSH W/ PL @BOT

KNIFE PL CENTERED

GL BEAM REINF SCREWS

SEE DETAIL 1 / S403

TO GL PURLIN

5/16

BACK PL DAPPED IN GL BEAM END

TYP 3/8Ø SCREW HOLE

EQUILIBRIUM

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REVISIONS

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DETAILS

TYPICAL DOUBLE

GL GIRDER &

COLUMN CONN

1 PLAN CHECK

RESPONSE 1 2 PLAN CHECK RESPONSE 2

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09/03/2020

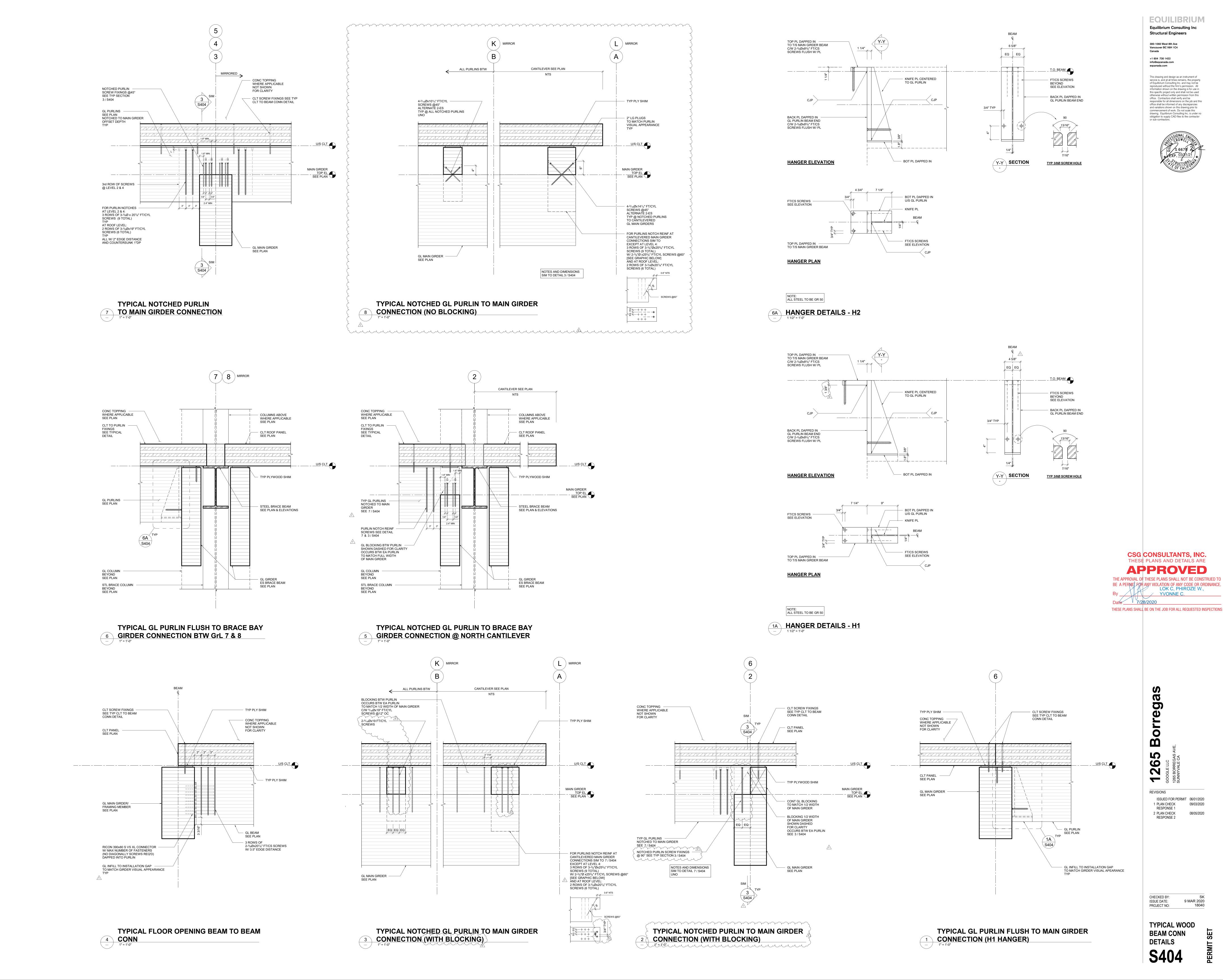
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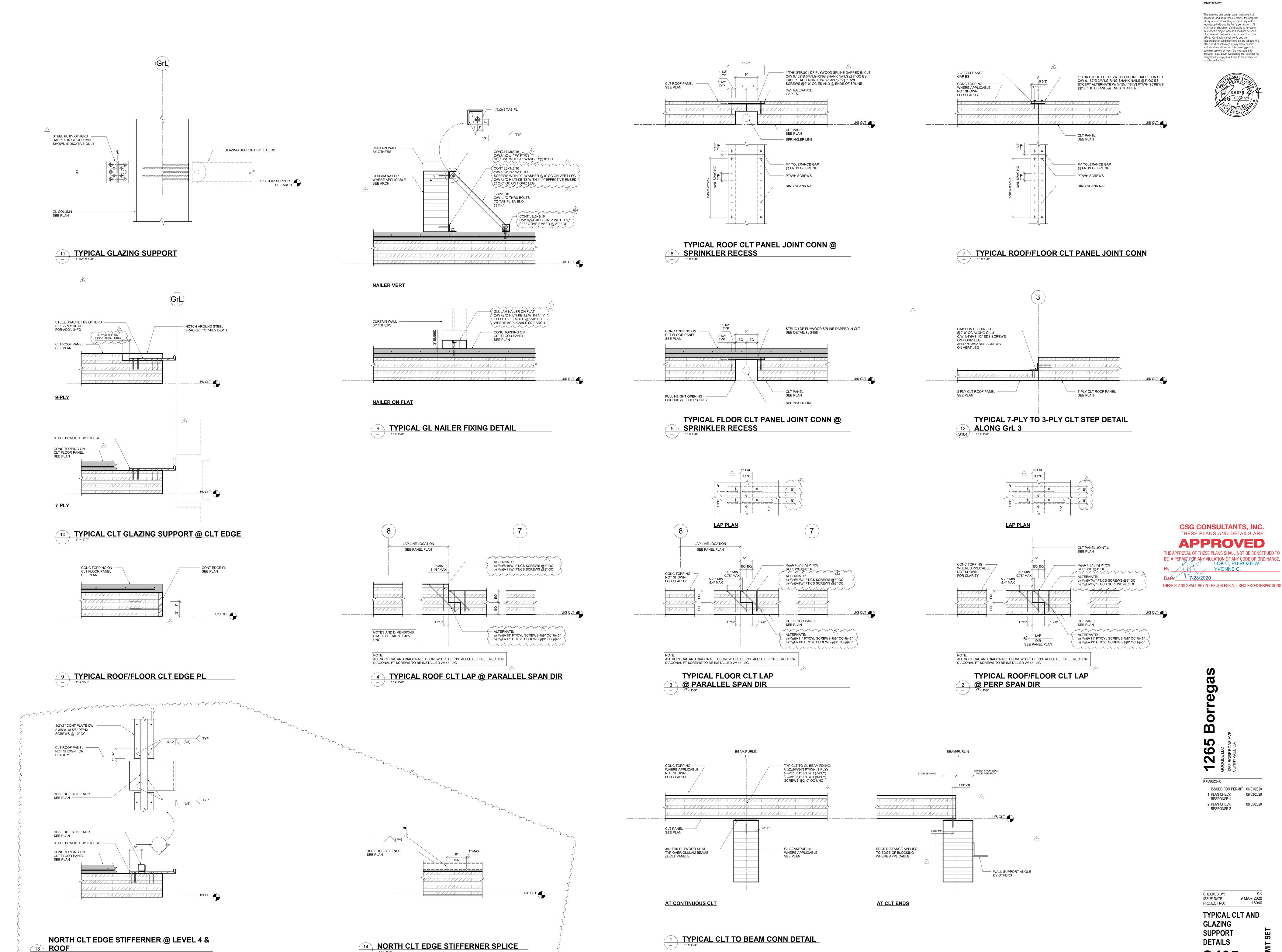
9 MAR 2020

TYP 3/8Ø SCREW HOLE

- BACK PL DAPPED IN GL BEAM END

3/4" TYP





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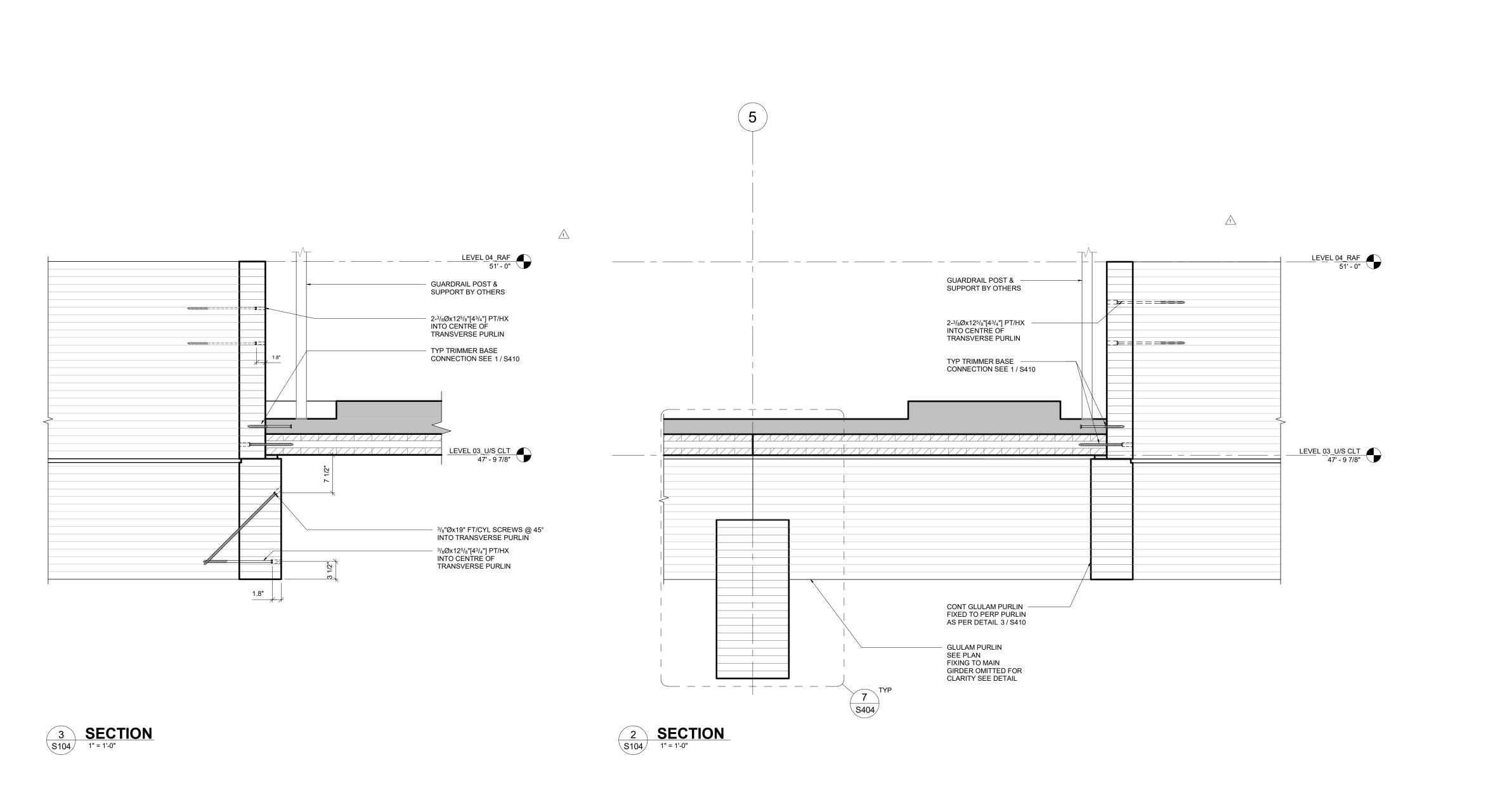
REVISIONS

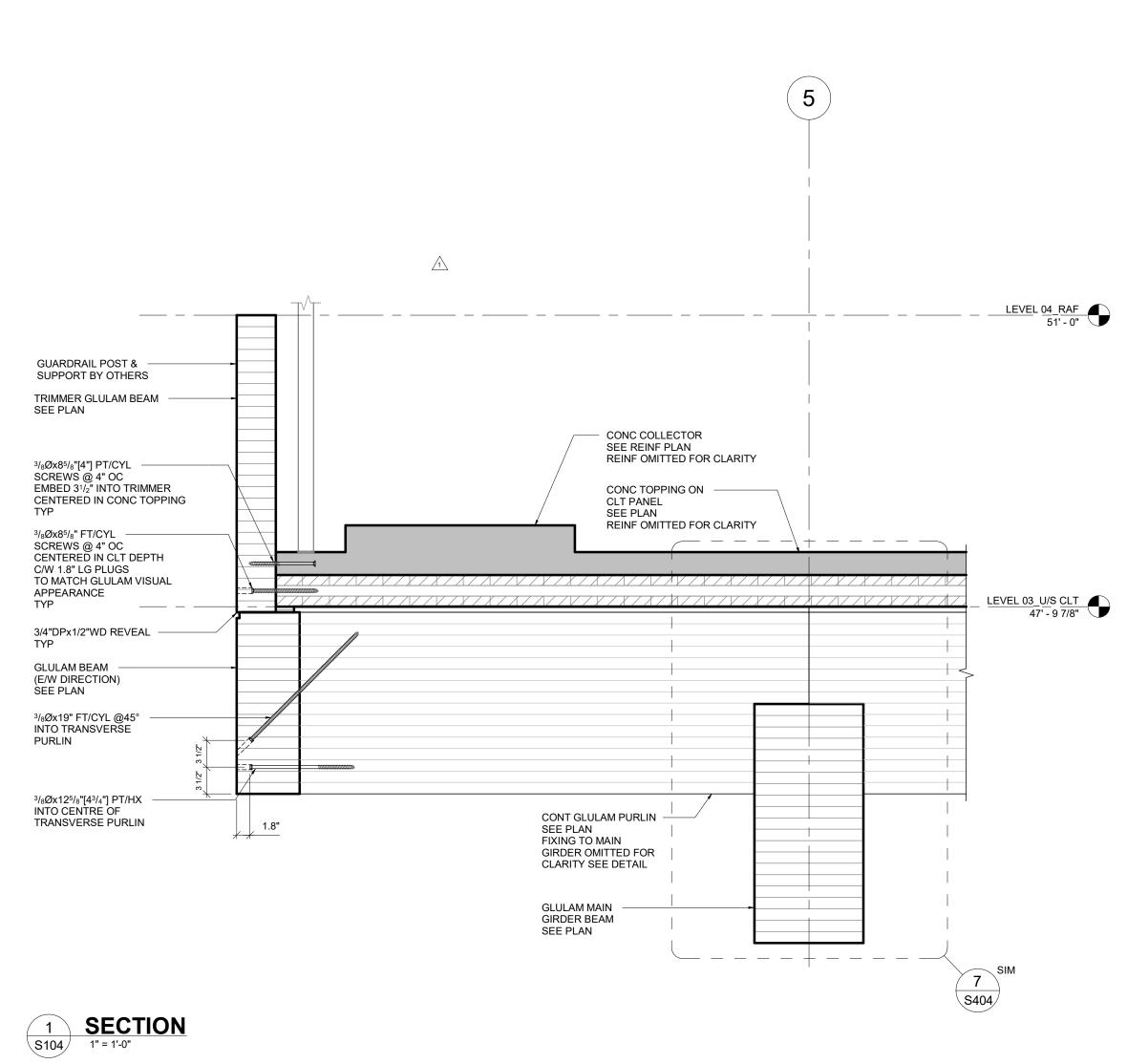
1 PLAN CHECK

RESPONSE 1

2 PLAN CHECK RESPONSE 2

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DETAILS RELOCATED TO S503

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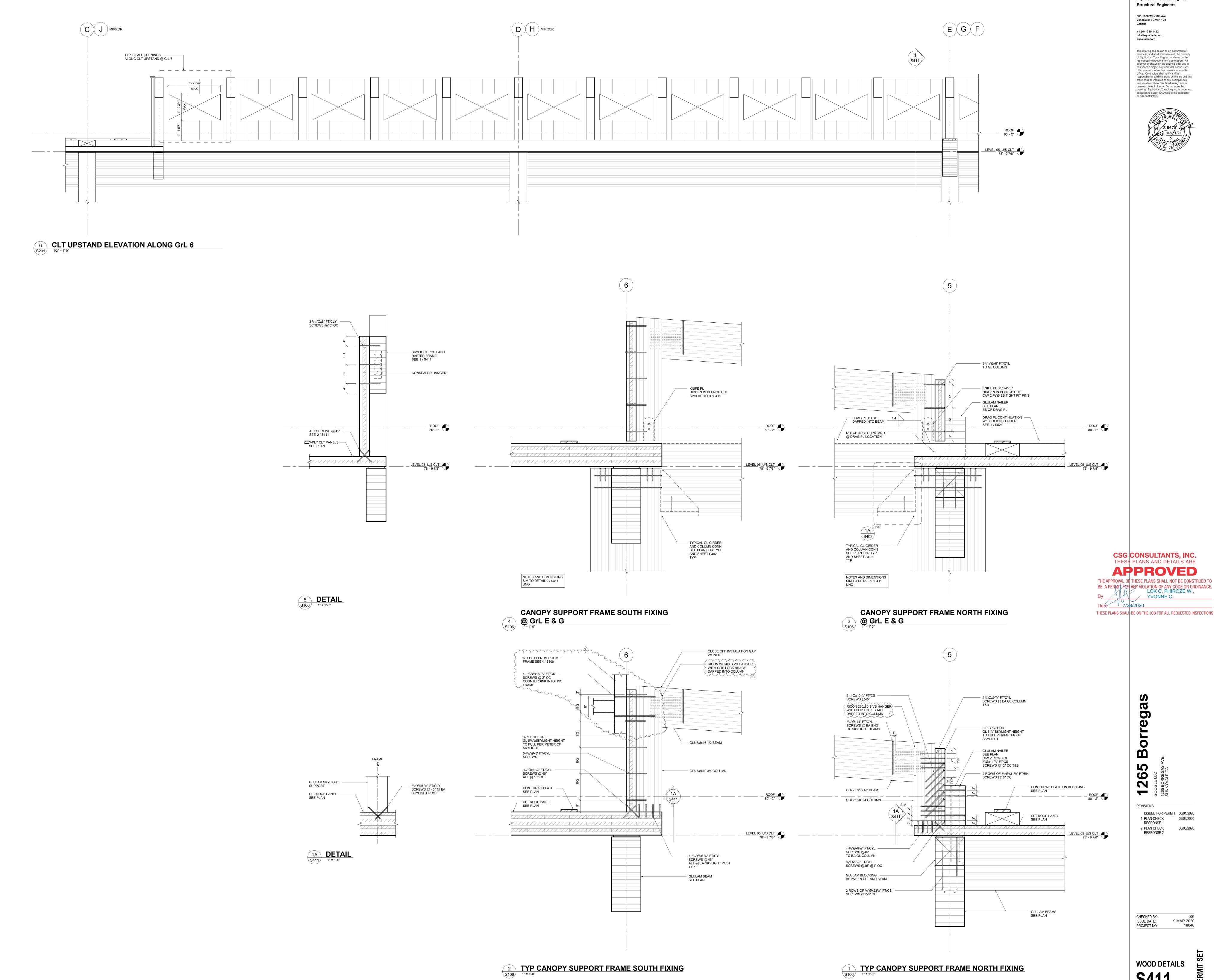
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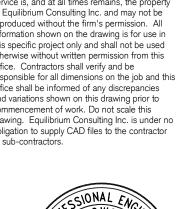


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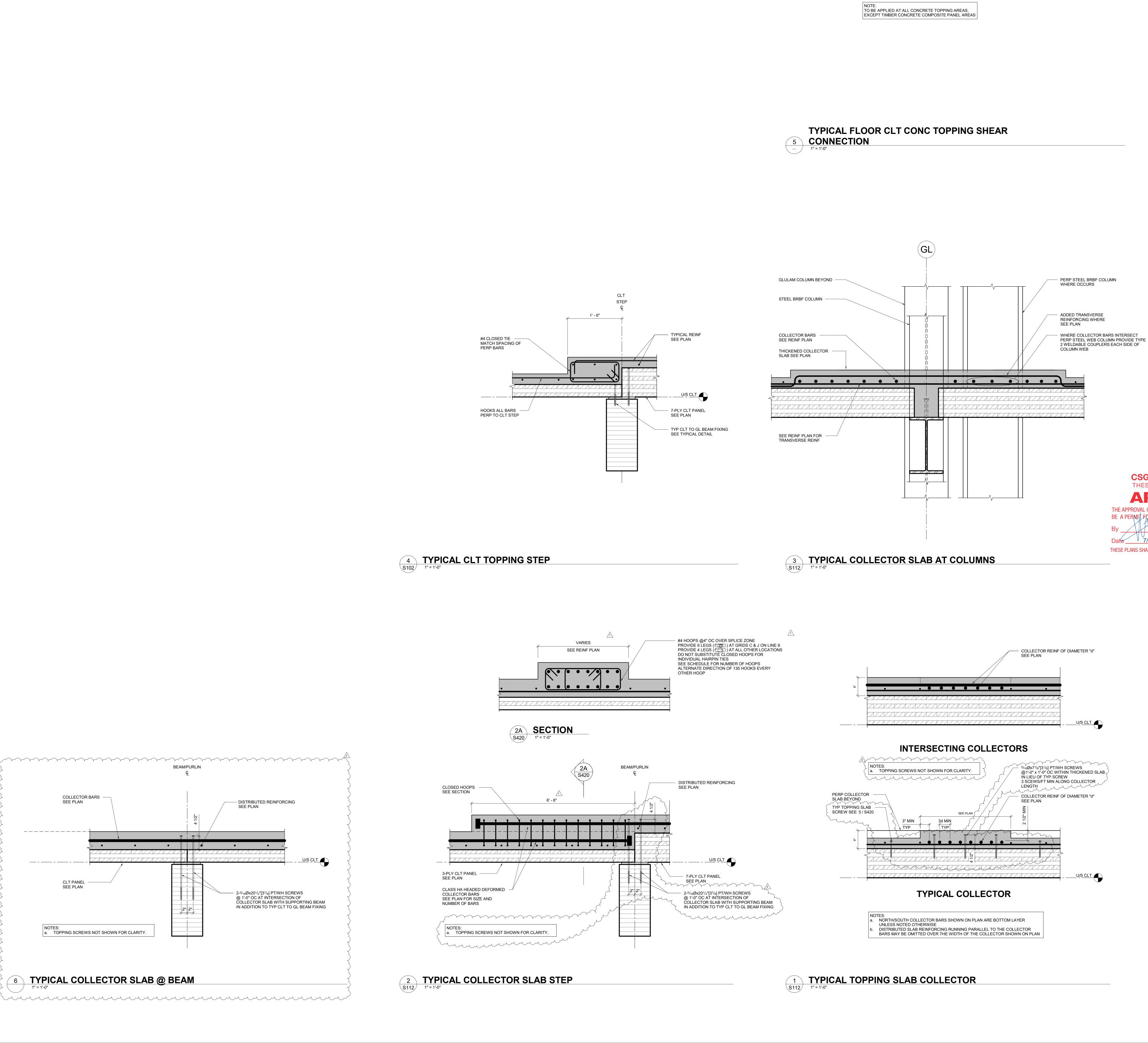
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5/16Øx5¹/2"[3¹/8] PT/WH SCREWS @2'-0" x 2'-0" OC

 CONC TOPPING ON CLT FLOOR PANEL



REVISIONS

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PROJECT NO:

DETAILS

TYPICAL CLT

TOPPING SLAB

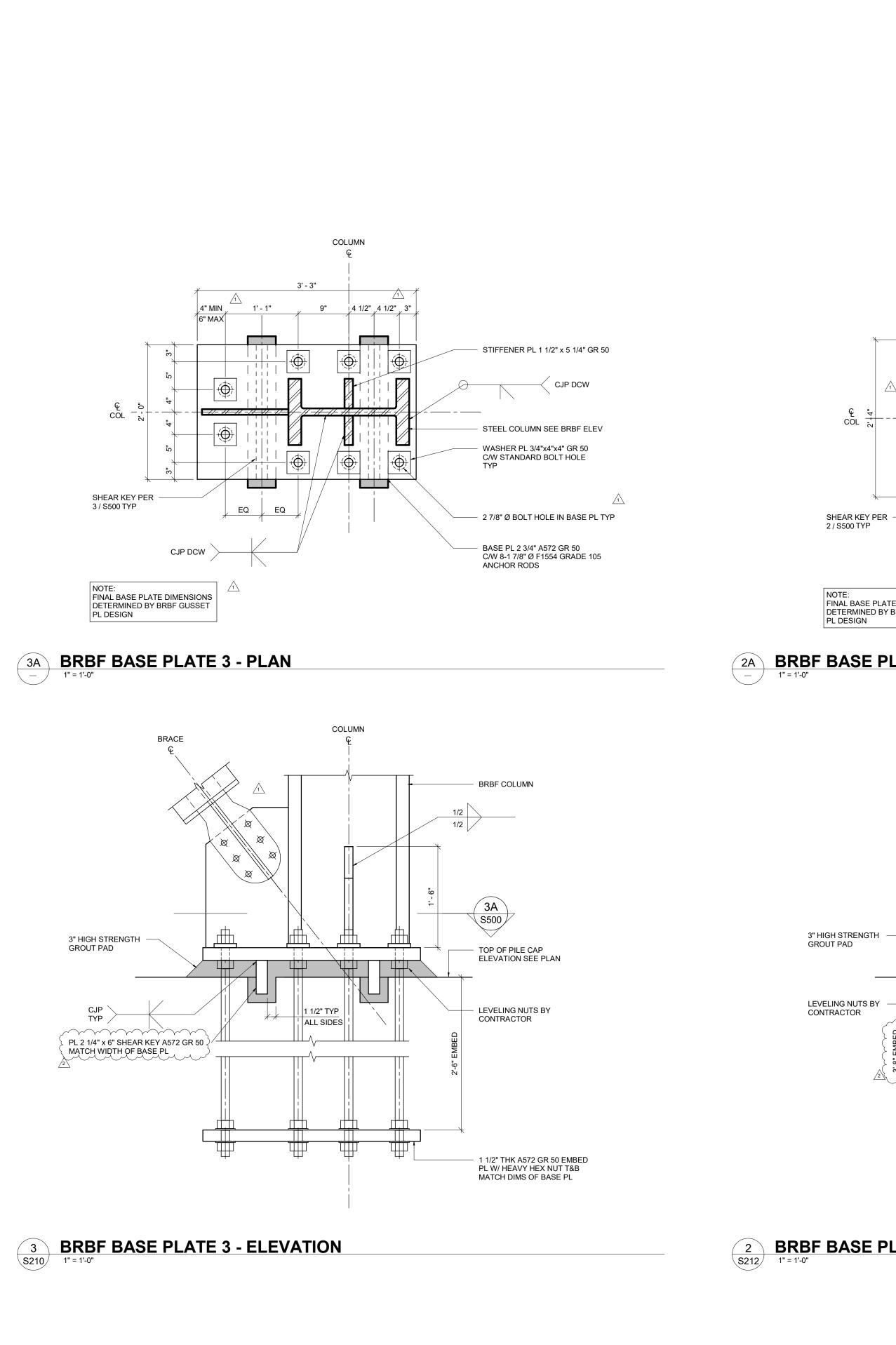
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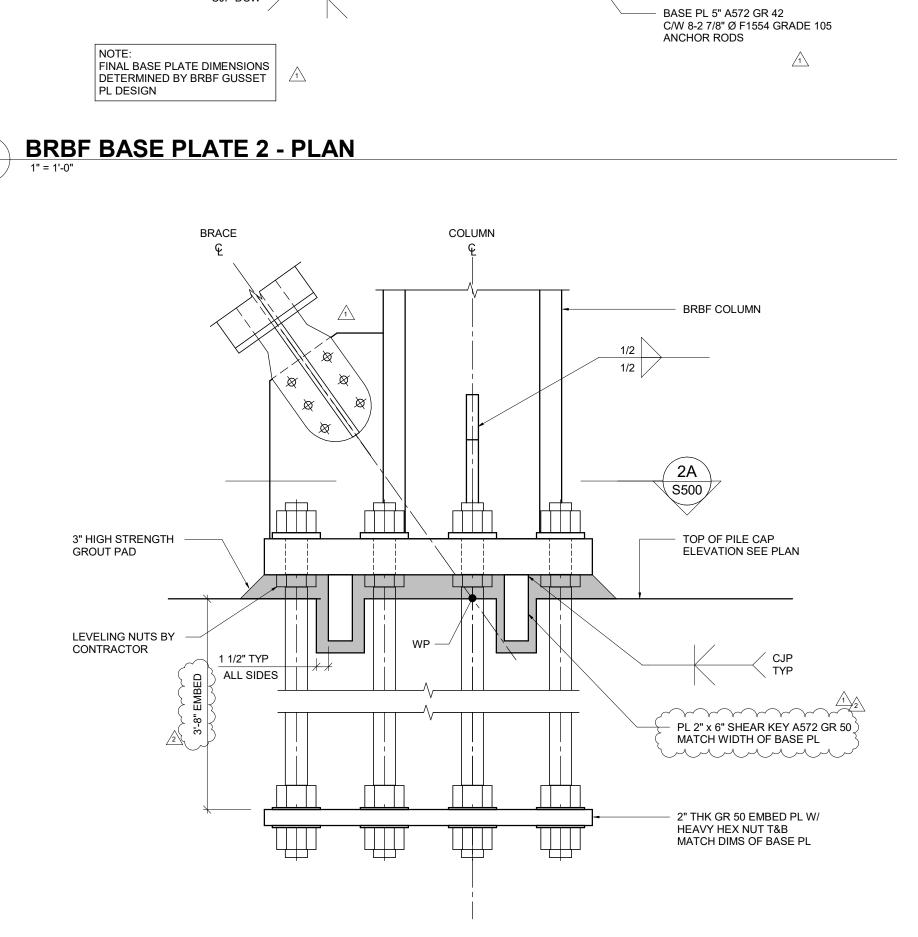
2 PLAN CHECK RESPONSE 2

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9 MAR 2020

18040





COLUMN

- STIFFENER PL 1 1/2" x 5 1/4" GR 50

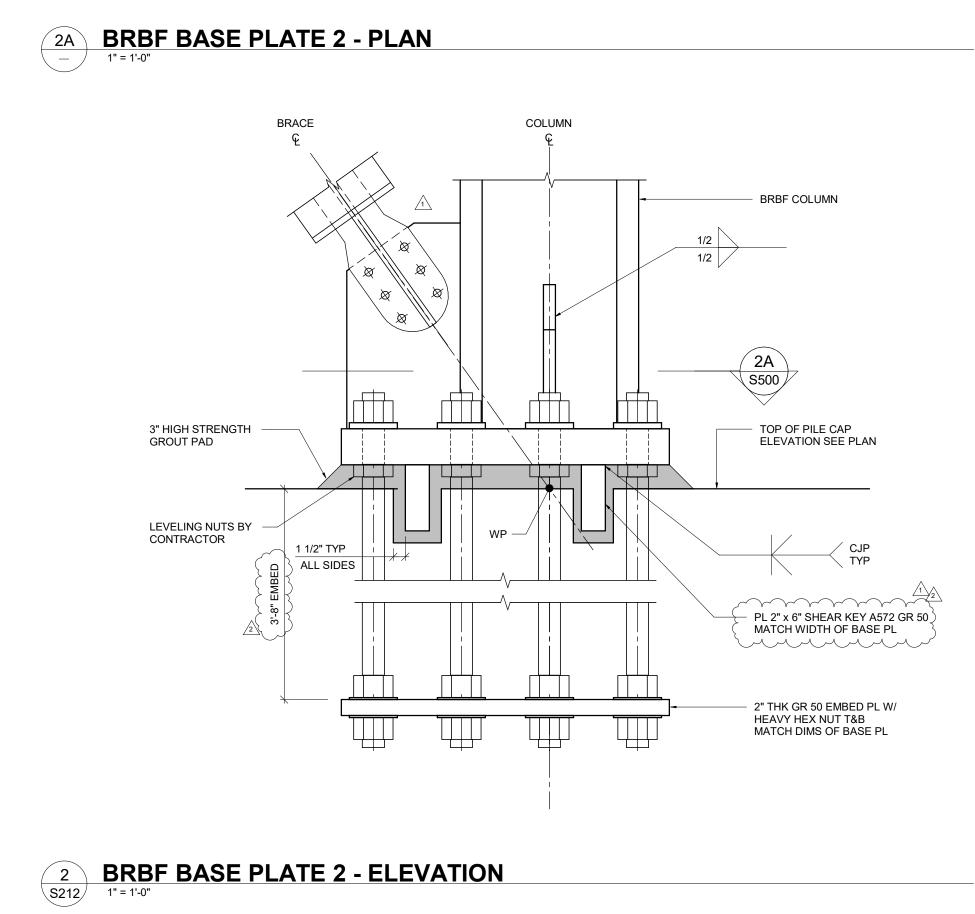
STEEL COLUMN SEE BRBF ELEV

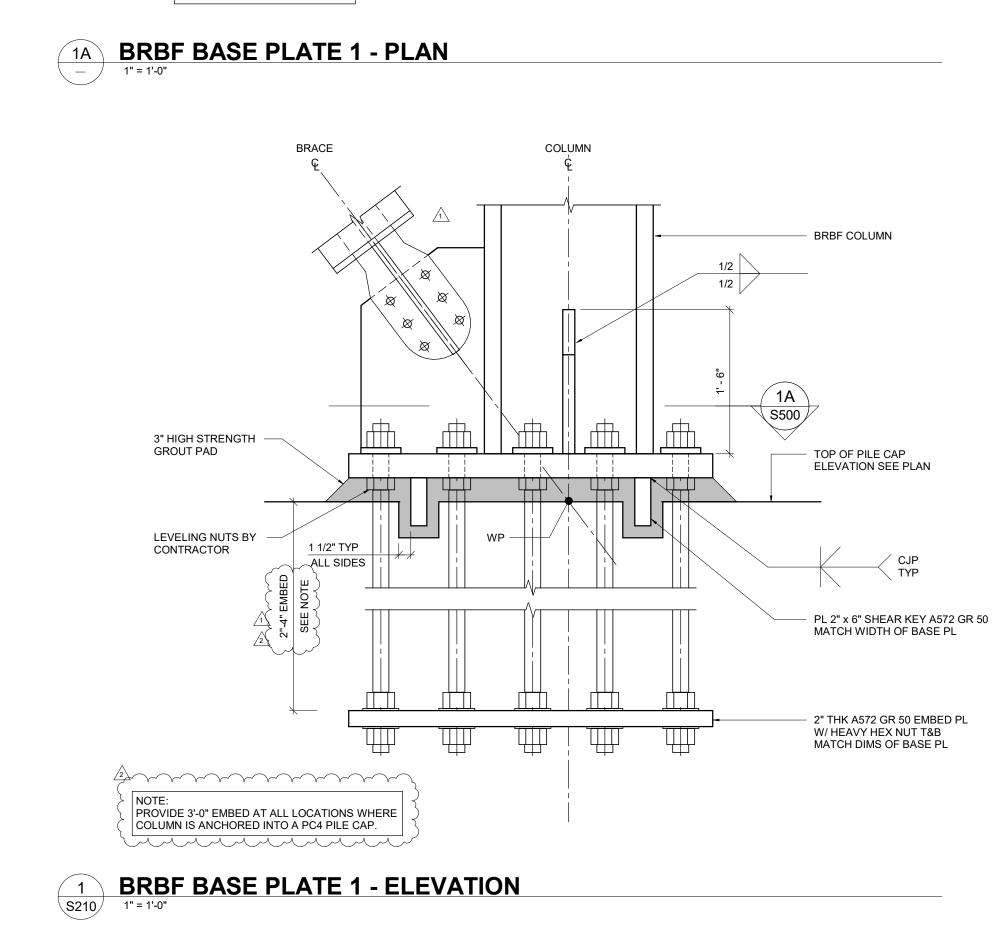
WASHER PL 3/4"x5"x5" GR 50
 C/W STANDARD BOLT HOLE TYP

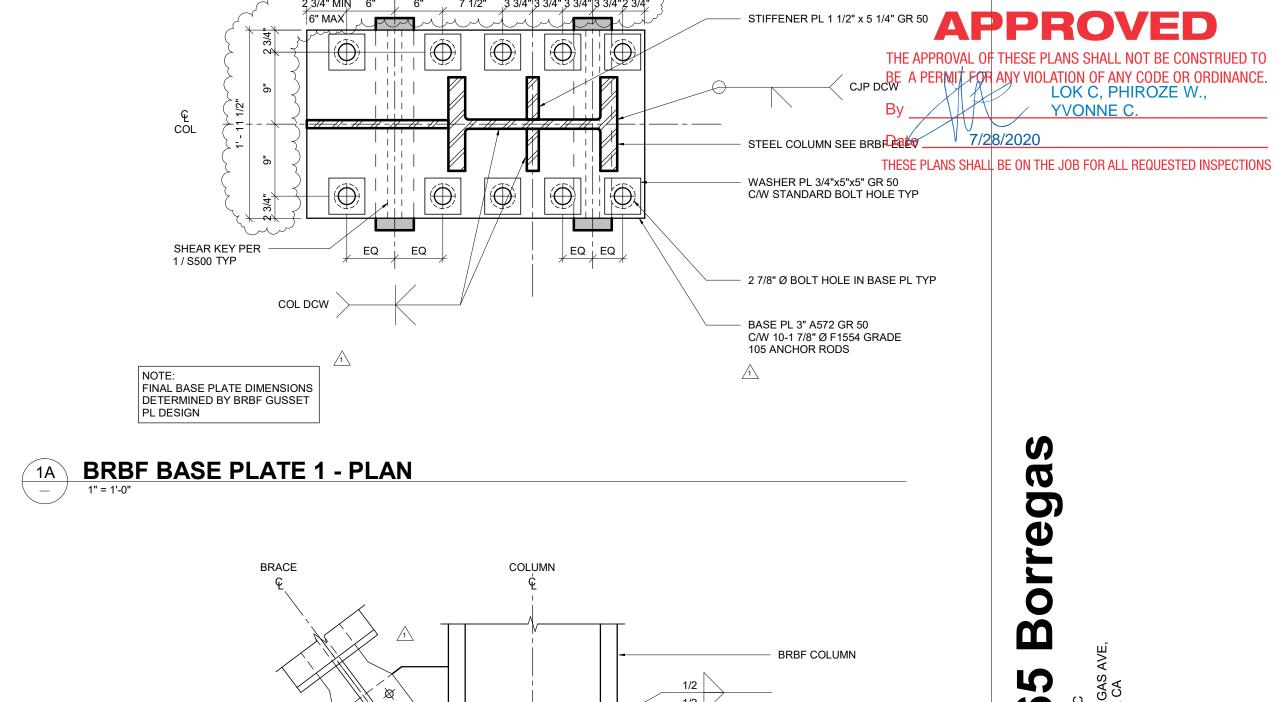
- 3 7/8" Ø BOLT HOLE IN BASE PL TYP

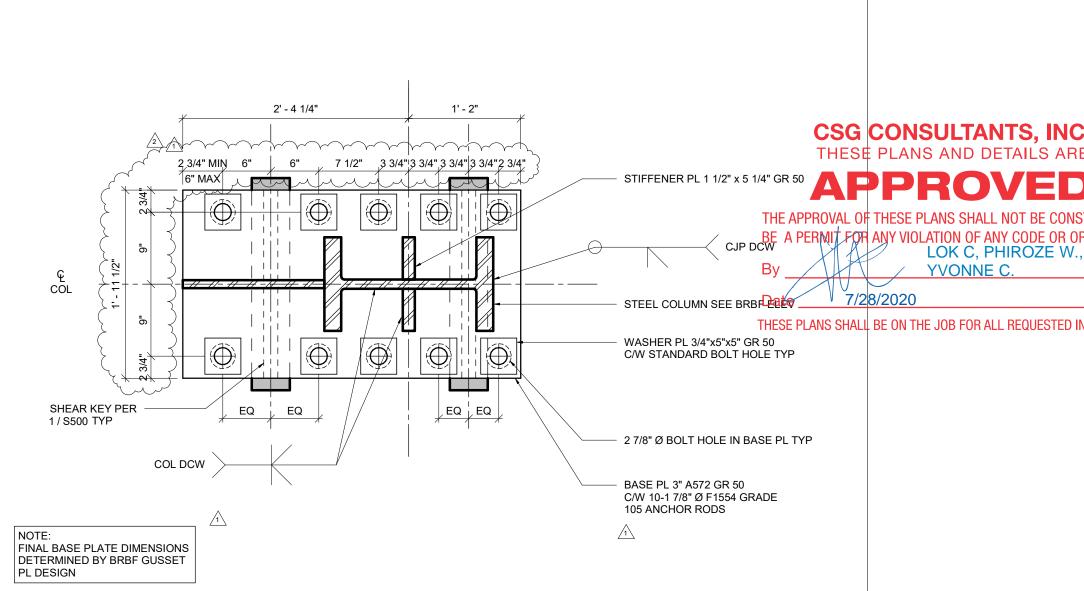
3' - 6 1/2"

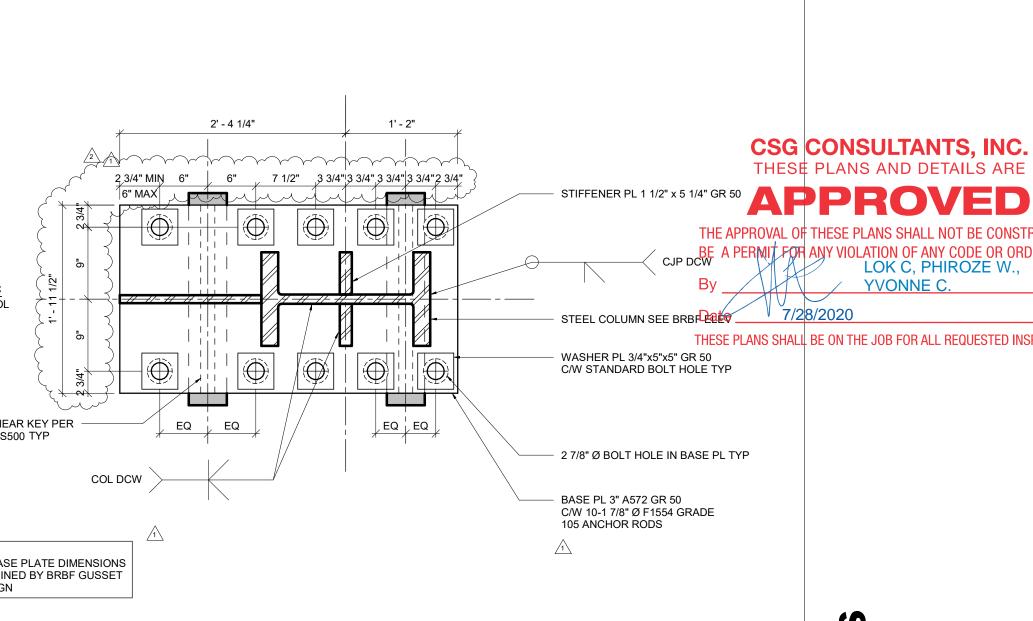
CJP DCW











STEEL COLUMN SEE PLAN

2"Ø BOLT HOLE IN

ANCHOR RODS

BASE PL 1 1/2" GR 50 C/W 4-1 1/8" Ø F1554 GRADE 105

TOP OF PILE CAP ELEVATION SEE PLAN

BASE PL TYP

WASHER PL 3/4"x4"x4" GR 50 C/W STANDARD BOLT HOLE

GRAVITY COL BASE PLATE - PLAN

1" = 1'-0"

3" HIGH STRENGTH — GROUT PAD

4 GRAVITY COL BASE PLATE - ELEVATION
1" = 1'-0"

| # |



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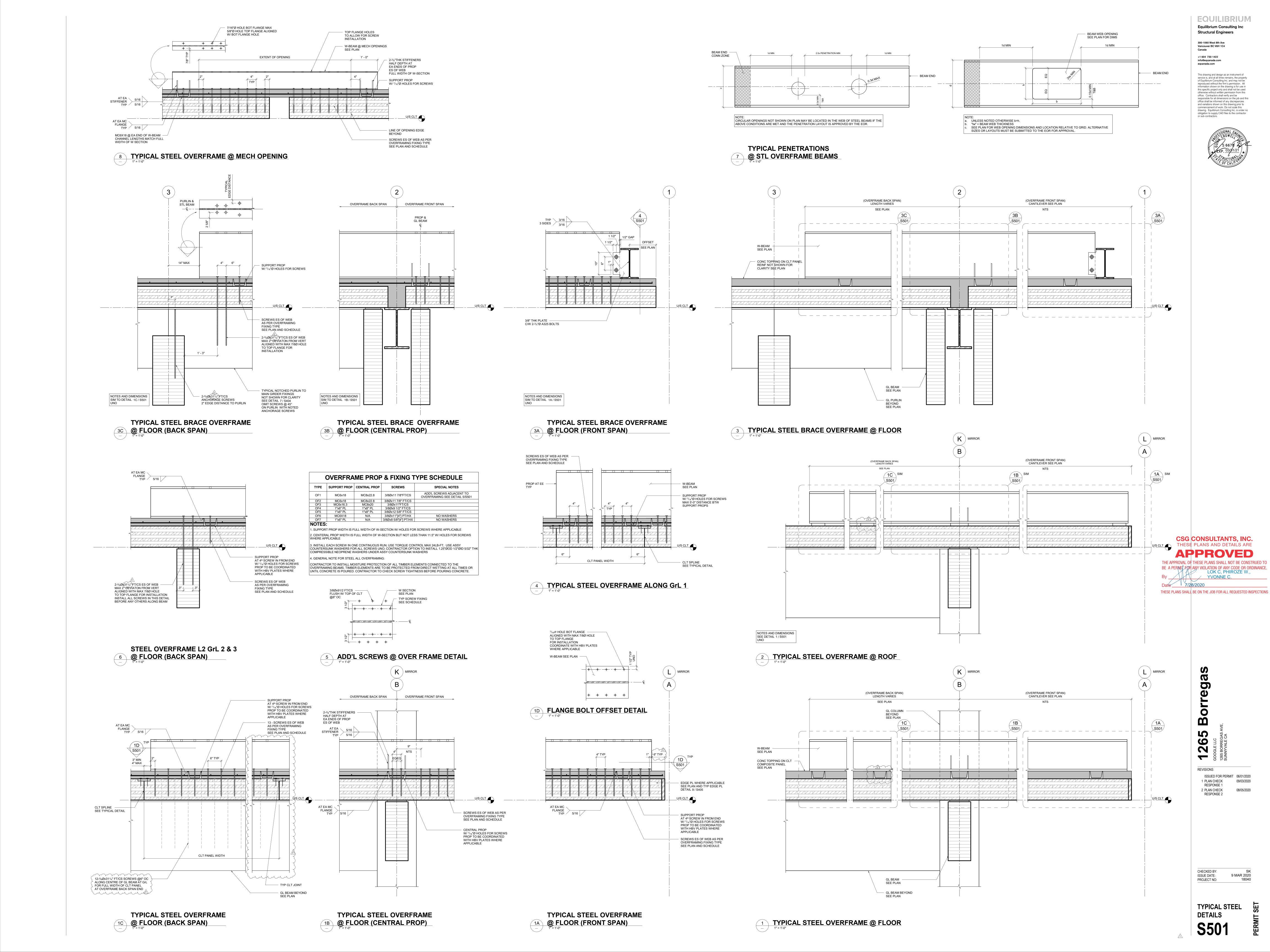
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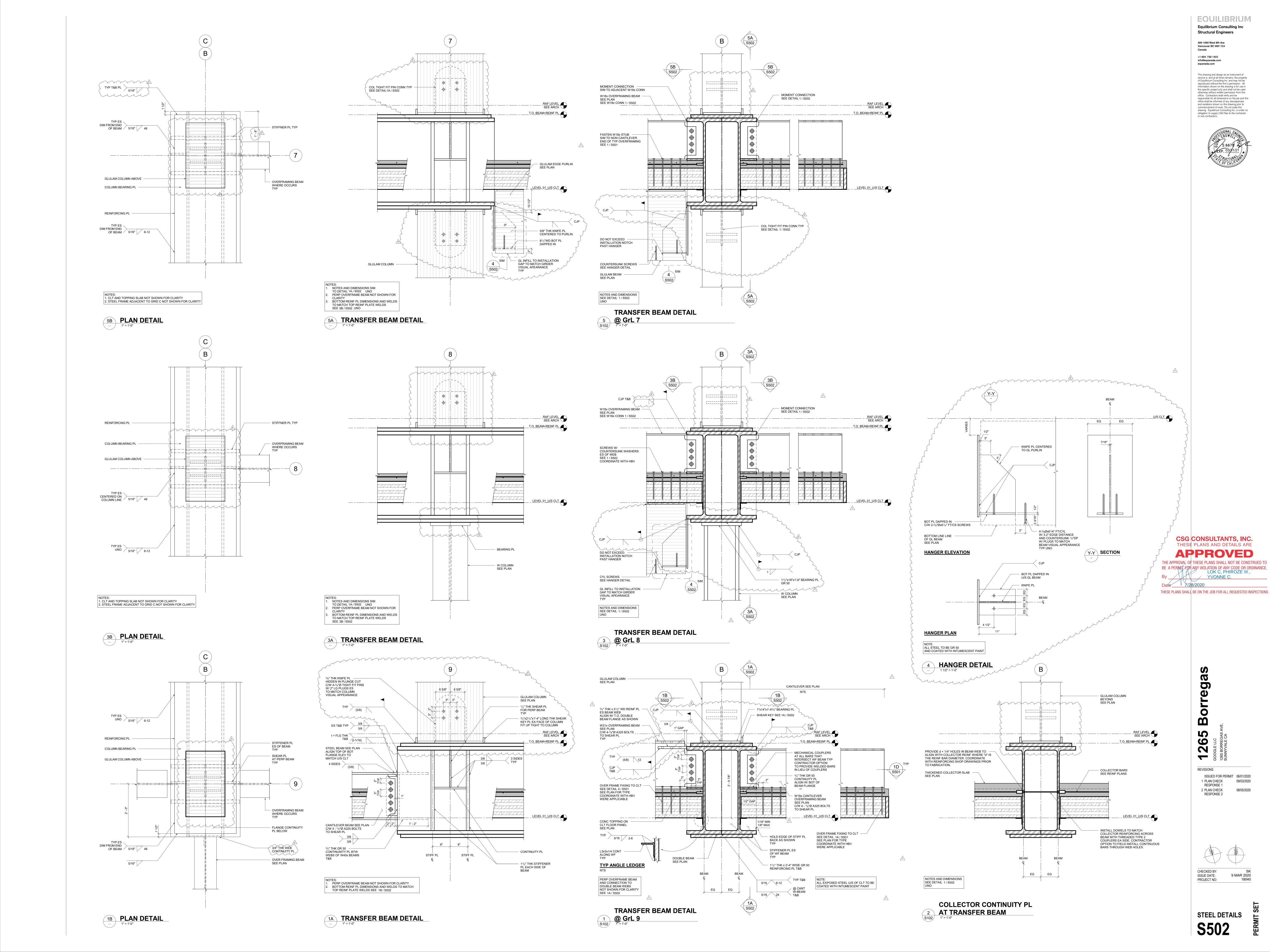
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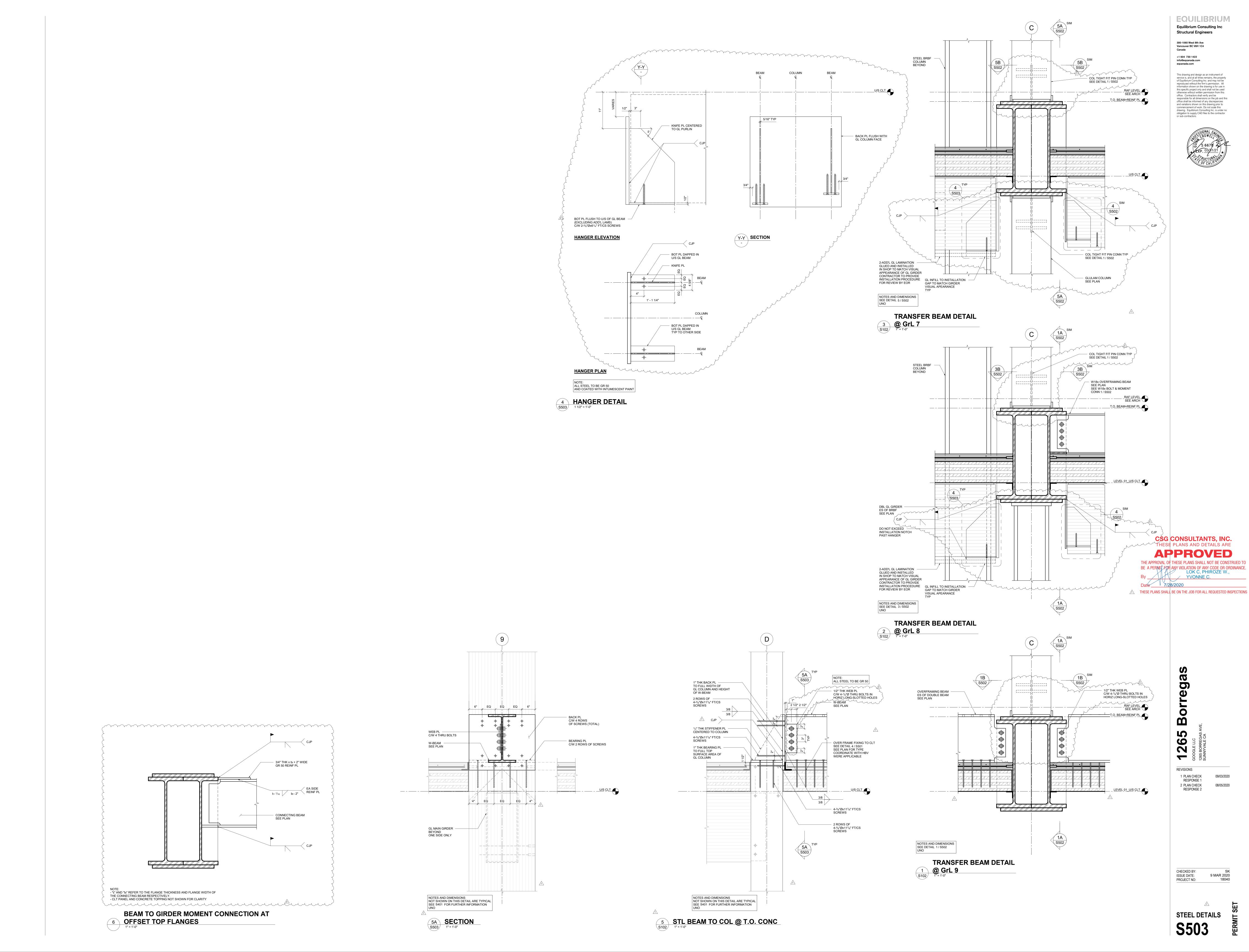
9 MAR 2020 18040 PROJECT NO:

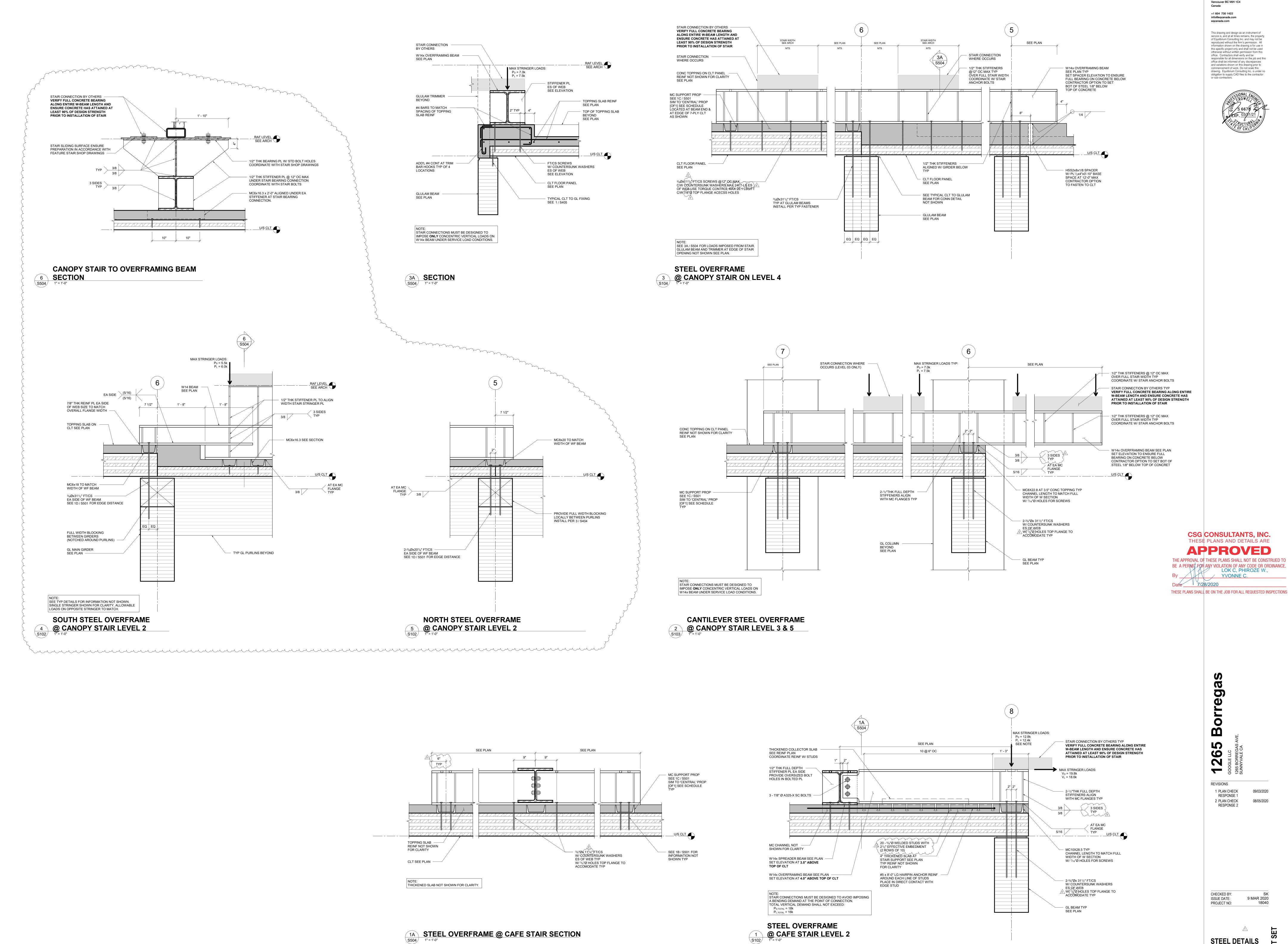
STEEL BASE **PLATE DETAILS**

CHECKED BY: ISSUE DATE:









STEEL DETAILS

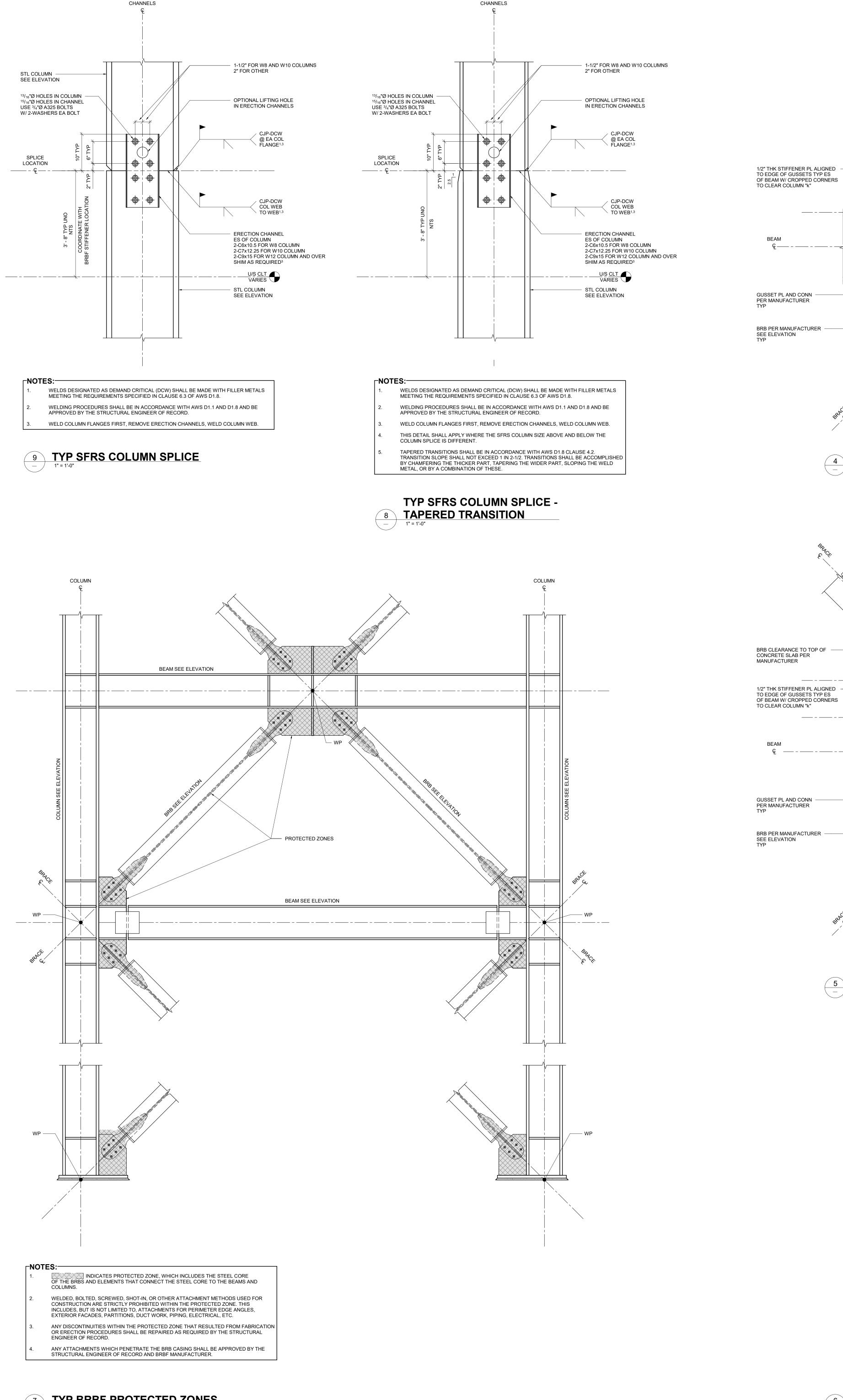
PROJECT NO: 18040

ISSUE DATE: 9 MAR 2020

08/05/2020

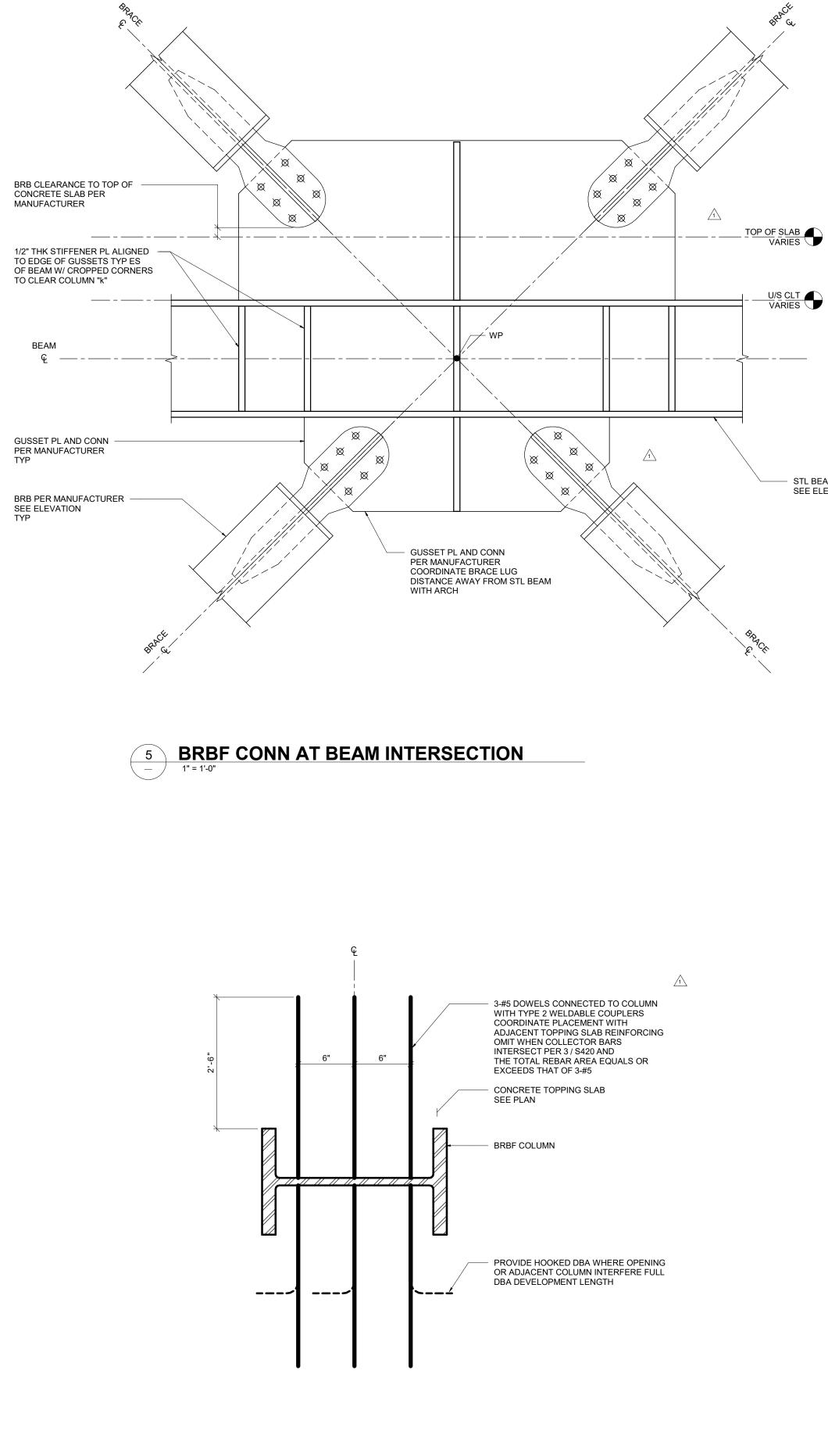
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COLUMN &

COLUMN &



GUSSET PL AND CONN PER MANUFACTURER COORDINATE BRACE LUG DISTANCE AWAY FROM STL BEAM

BRBF CONN AT ROOF BEAM INTERSECTION

1" = 1'-0"





CONTINUATION OF **COLUMN ABOVE** WHERE APPLICABLE

TYP BRBF BEAM TO COLUMN CONNECTION

BEAM WEB TO COLUMN FLANGE WELD LENGTH = BEAM "T"

3 W/O GUSSET PL 1" = 1'-0"

STL BEAM ----

SEE ELEVATION

1/2" THK GR 50 PL -W/ 4-7/8"Ø A325X BOLTS TOTAL

BEAM

MANUFACTURER SEE ELEVATION

BRB CLEARANCE TO TOP OF -CONCRETE SLAB PER MANUFACTURER

GUSSET PL AND CONN PER MANUFACTURER

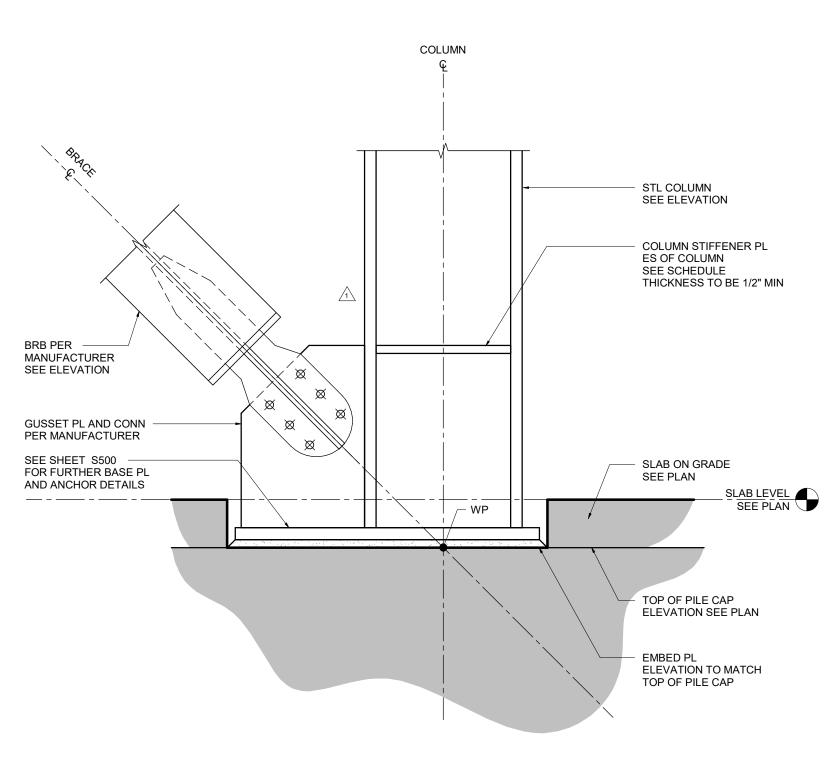
SEE ELEVATION 1/2" THK PL ES -

W/ 16-⁷/₈"Ø A325X BOLTS TOTAL

PL AND WELD AS PER — BRBF MANUFACTURER

SEE ELEVATION

SEE ELEVATION



BRBF CONN AT BEAM TO COLUMN

2 INTERSECTION

- 1" = 1'-0"



REVISIONS

1 PLAN CHECK

RESPONSE 1

2 PLAN CHECK RESPONSE 2

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- CAP PL OF THICKNESS EQUAL TO

BEAM FLANGE PLUS 1/4"
WHERE COLUMN TOP OCCURS

 STL COLUMN SEE ELEVATION

- 1/2" THK COLUMN STIFFENER PL ES

W/ CROPPED CORNERS TO CLEAR COLUMN "k"

— 1" THK CONTINUITY PL ES T&B W/ CROPPED CORNERS TO CLEAR COLUMN "k"

- STL COLUMN

WITH ARCH

SEE ELEVATION

GUSSET PL AND CONN
PER MANUFACTURER
COORDINATE BRACE LUG

DISTANCE AWAY FROM STL BEAM

TYPICAL BRBF





265

2 Plan Check

ISSUE DATE: PROJECT NO: 06 JAN 2020

COREBRACE BRB ELEVATIONS 🗔

/COREBRACE 5789 W. Wells Park Rd. West Jordan, Utah 84081

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- CoreBrace Engineering Design Responsibilities are limited to the following:
- ➤ Complete BRB design based on A_{sc} provided by E.O.R.
- > Design connection of BRB to gusset.
- > Design gusset connection to frame columns, beams and base plates. ➤ Member sizes, dimensions, and elevations on CB sheets are shown for coordination only.
- Project documents shall govern. Verify in field as necessary.
- > See project documents for additional information; more stringent requirements on project documents shall govern.

General Notes:

- 1. See "Casing Buried in Concrete Detail" where concrete slab will interfere with required BRB stroke. 2. Structural steel detailer and erection team to consider erectability constraints when determining piece erection
- sequencing and field welding versus shop welding of stiffeners and gussets.
- 3. Detail callouts are typical at the given frame location, UNO. See "CB" sheets for typical details. 4. Single-line diagrams indicate work-point axis of members, UNO.

Abbreviations

Connection

AUUICV	/1at10115				
Abt	About	DIA	Diameter	NTS	Not to Scale
Approx	Approximate	DIM	Dimension	PL	Plate
Asc	Area of Steel Core	dc	Depth of column	Req'd	Required
bfb	Width of flange of beam	(E)	Existing	Sched	Schedule
bfc	Width of flange of column	EQ	Equal	SIM	Similar
Bldg	Building	FF	Finished Floor	SYM	Symetrical
Bm	Beam	FHG	Full-Height Gusset	Stiff	Stiffener
Bot	Bottom	Flng	Flange	tfb	Thickness of flange of beam
B.P.	Base Plate	Galv	Galvanized	tfc	Thickness of flange of column
BRB	Buckling-Restrained Brace	Gsst	Gusset	T&B	Top and Bottom
CB	CoreBrace	Info	Information	T.O.F.	Top of Footing
CJP	Complete Joint Penetration	LVL	Level	T.O.C	Top of Concrete
C_{L}	Centerline	MAX	Maximum	twb	Thickness of web of beam
Col	Column	MIN	Minimum	TYP	Typical
Conc	Concrete	N&FS	Near and Far Side	UNO	Unless Noted Otherwise

WORK POINT

NOTES:

BRB-XX

19##

T.O.S. = X'-X''

T.O.B.P. = X'-X''

Symbols Legend:

SHEETS FOR TYPICAL DETAILS.

X = BASE PL THICKNESS

Y = GROUT THICKNESS

1. DETAIL CALLOUTS ARE TYPICAL AT THE GIVEN FRAME LOCATION, UNO. SEE "CB"

PURPOSES ONLY, PROJECT DOCUMENTS GOVERN. FIELD VERIFY AS NECESSARY.

2. DIMENSIONS, ELEVATIONS & MEMBER SIZES SHOWN FOR COORDINATION

3. SINGLE-LINE DIAGRAMS INDICATE WORK-POINT AXIS OF MEMBERS, UNO.

INDICATES FRAMING OF GUSSET PL TO COLUMN WEB (WEAK AXIS)

BRACE MARK IDENTIFICATION

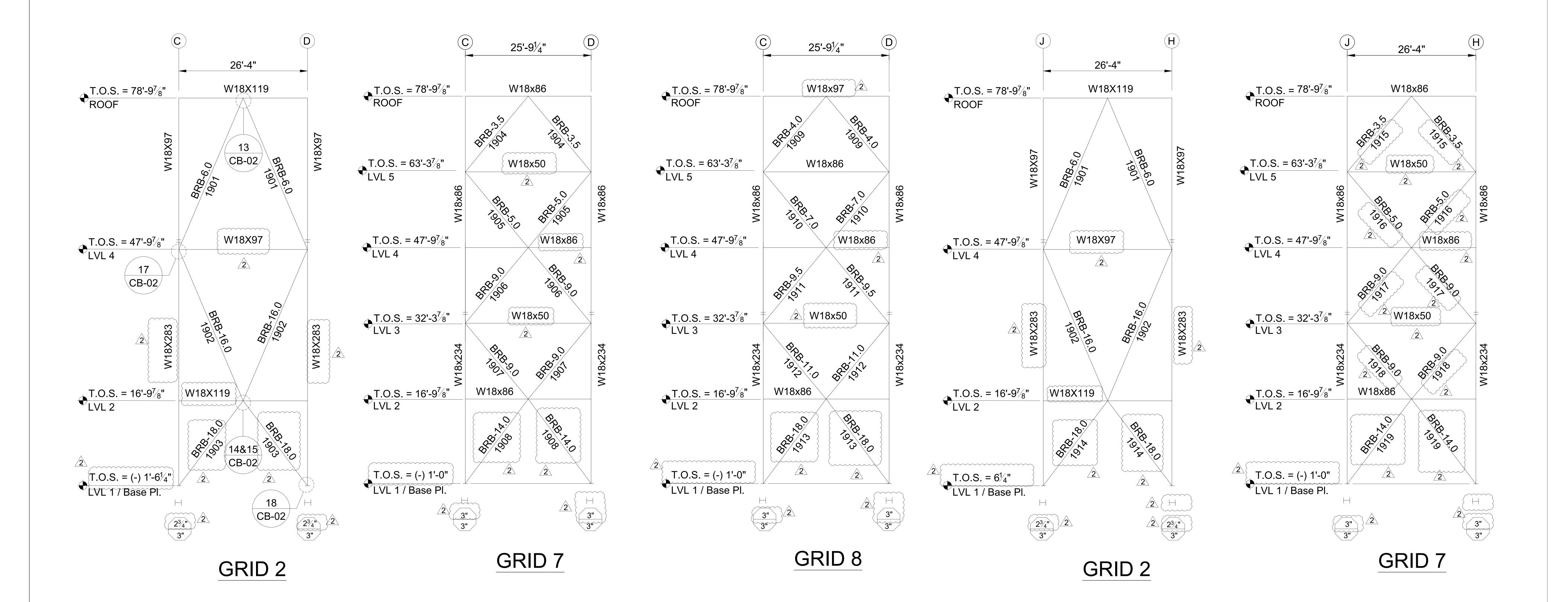
INDICATES FRAMING OF GUSSET PL TO COLUMN FLANGE (STRONG AXIS)

INDICATES BRB WITH CORE AREA SIZE OF XX in^2

INDICATES FRAMING OF GUSSET PL TO HSS COLUMN (SLOT GUSSET THROUGH)

RELATIVE DISTANCE TO TOP OF STEEL (FROM F.F. 0'-0")

RELATIVE DISTANCE TO TOP OF BASE (FROM F.F. 0'-0")



CSG CONSULTANTS, INC.
THESE PLANS AND DETAILS ARE BE A PERMIT FOR ANY VIOLATION OF ANY CODE OR ORDINANCE LOK C, PHIROZE W.,

By YVONNE C. THESE PLANS SHALL BE ON THE JOB FOR ALL REQUESTED INSPECTIONS



265

1 Plan Check

2 Plan Check Response 2

ISSUE DATE: PROJECT NO: 06 JAN 2020 1803027

COREBRACE BRB ELEVATIONS 🗔

/COREBRACE 5789 W. Wells Park Rd. West Jordan, Utah 84081

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- CoreBrace Engineering Design Responsibilities are limited to the following:
- ➤ Complete BRB design based on A_{sc} provided by E.O.R. > Design connection of BRB to gusset.
- > Design gusset connection to frame columns, beams and base plates. ➤ Member sizes, dimensions, and elevations on CB sheets are shown for coordination only.
- Project documents shall govern. Verify in field as necessary.
- > See project documents for additional information; more stringent requirements on project documents shall govern.

General Notes:

- 1. See "Casing Buried in Concrete Detail" where concrete slab will interfere with required BRB stroke.
- 2. Structural steel detailer and erection team to consider erectability constraints when determining piece erection sequencing and field welding versus shop welding of stiffeners and gussets.
- 3. Detail callouts are typical at the given frame location, UNO. See "CB" sheets for typical details. 4. Single-line diagrams indicate work-point axis of members, UNO.

Abbreviations

Connection

Abt	About	DIA	Diameter	NTS	Not to Scale
Approx	Approximate	DIM	Dimension	PL	Plate
Asc	Area of Steel Core	de	Depth of column	Req'd	Required
bfb	Width of flange of beam	(E)	Existing	Sched	Schedule
bfc	Width of flange of column	EQ	Equal	SIM	Similar
Bldg	Building	FF	Finished Floor	SYM	Symetrical
Bm	Beam	FHG	Full-Height Gusset	Stiff	Stiffener
Bot	Bottom	Flng	Flange	tfb	Thickness of flange of beam
B.P.	Base Plate	Galv	Galvanized	tfc	Thickness of flange of column
BRB	Buckling-Restrained Brace	Gsst	Gusset	T&B	Top and Bottom
CB	CoreBrace	Info	Information	T.O.F.	Top of Footing
CJP	Complete Joint Penetration	LVL	Level	T.O.C	Top of Concrete
$C_{ m L}$	Centerline	MAX	Maximum	twb	Thickness of web of beam
Col	Column	MIN	Minimum	TYP	Typical
Conc	Concrete	N&FS	Near and Far Side	UNO	Unless Noted Otherwise

WP

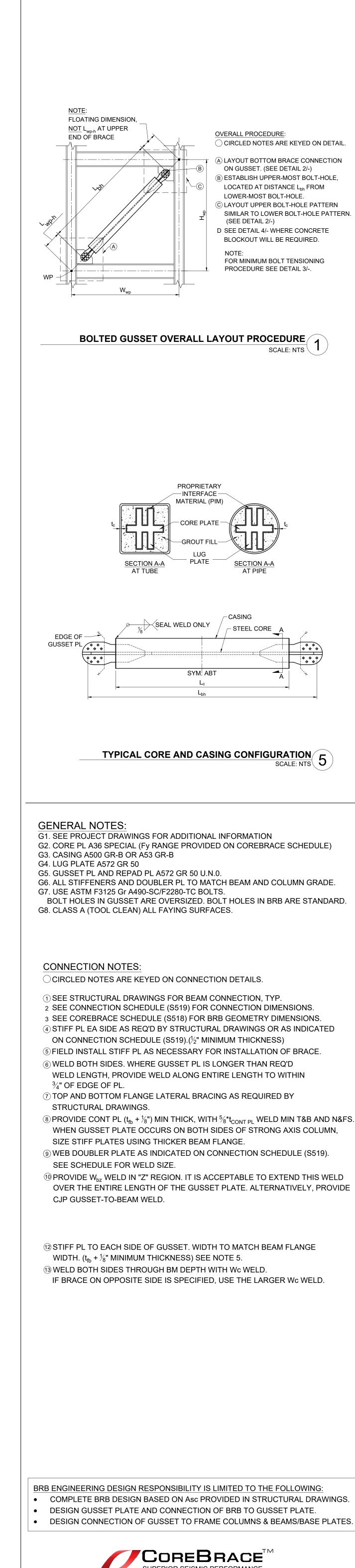
WORK POINT

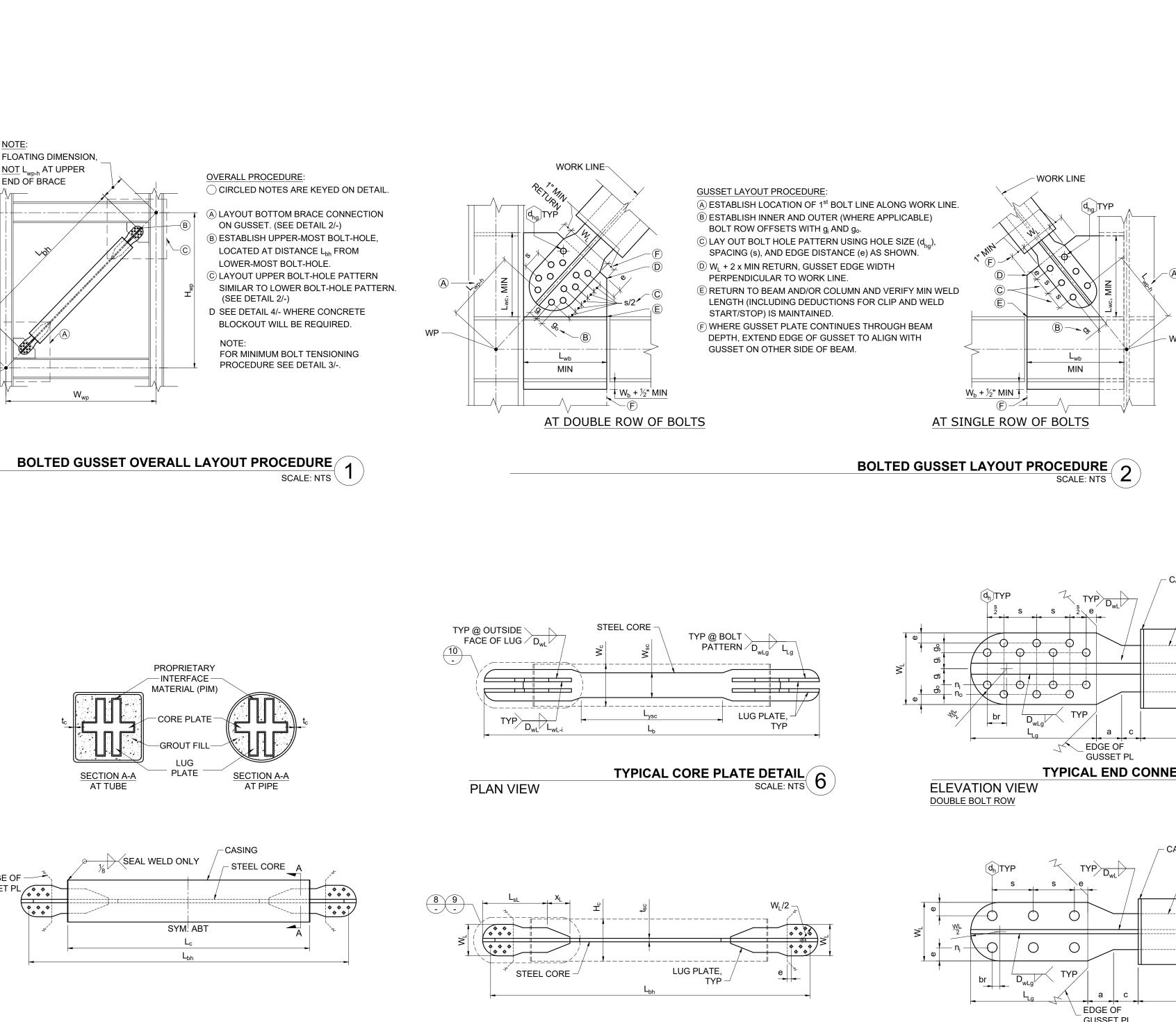
- 1. DETAIL CALLOUTS ARE TYPICAL AT THE GIVEN FRAME LOCATION, UNO. SEE "CB"
- SHEETS FOR TYPICAL DETAILS.
- 2. DIMENSIONS, ELEVATIONS & MEMBER SIZES SHOWN FOR COORDINATION
- PURPOSES ONLY, PROJECT DOCUMENTS GOVERN. FIELD VERIFY AS NECESSARY. 3. SINGLE-LINE DIAGRAMS INDICATE WORK-POINT AXIS OF MEMBERS, UNO.

Symbols Legend:

- X = BASE PL THICKNESS
- Y = GROUT THICKNESS
- INDICATES FRAMING OF GUSSET PL TO COLUMN WEB (WEAK AXIS) INDICATES FRAMING OF GUSSET PL TO COLUMN FLANGE (STRONG AXIS)
- INDICATES FRAMING OF GUSSET PL TO HSS COLUMN (SLOT GUSSET THROUGH)

BRB-XX INDICATES BRB WITH CORE AREA SIZE OF XX in^2 RELATIVE DISTANCE TO TOP OF STEEL (FROM F.F. 0'-0") T.O.S. = X'-X''RELATIVE DISTANCE TO TOP OF BASE (FROM F.F. 0'-0") T.O.B.P. = X'-X''BRACE MARK IDENTIFICATION 19##





ELEVATION VIEW

W.P. @ CNTR OF COL &

1/2 NOM BM DEPTH —

(SHOWN AT STRONG AXIS COLUMN)

(SHOWN WITH DOUBLE BOLT ROW)

BETWEEN STIFFS 13

W.P. @ CNTR OF COL &

(SHOWN AT STRONG AXIS COLUMN)

W.P. @ CNTR OF COL &

STIFFS / 13

(SHOWN AT STRONG AXIS COLUMN)

(SHOWN WITH DOUBLE BOLT ROW)

5789 W. Wells Park Rd. West Jordan, Utah 84081 (801) 280-0701

1/2 NOM BM DEPTH

FROM TOP

1/2 NOM BM DEPTH

FROM TOP

TYPICAL CONNECTION AT BRACE TOP & BOTTOM 10

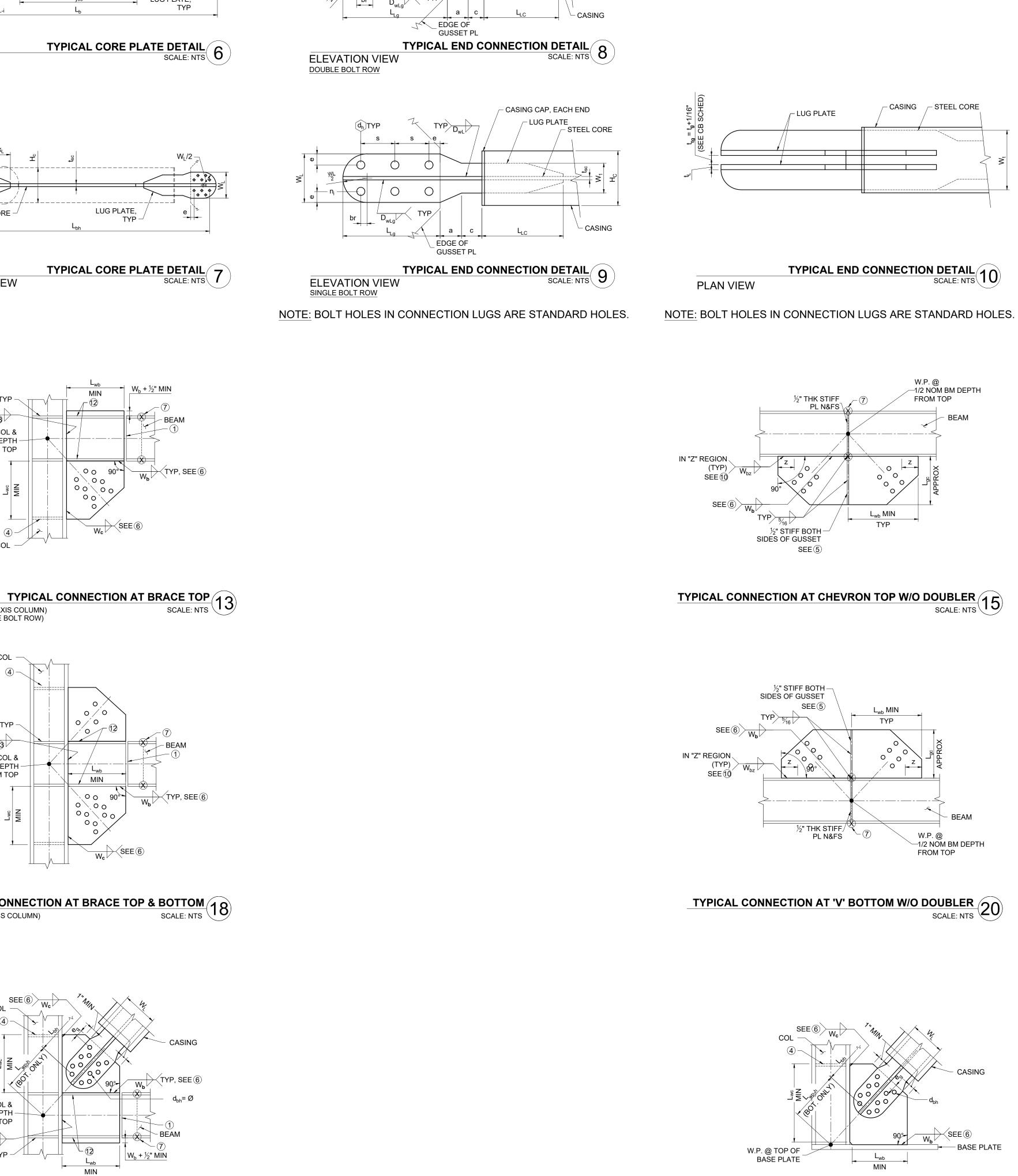
TYPICAL CONNECTION AT BRACE BOTTOM SCALE: NTS 23

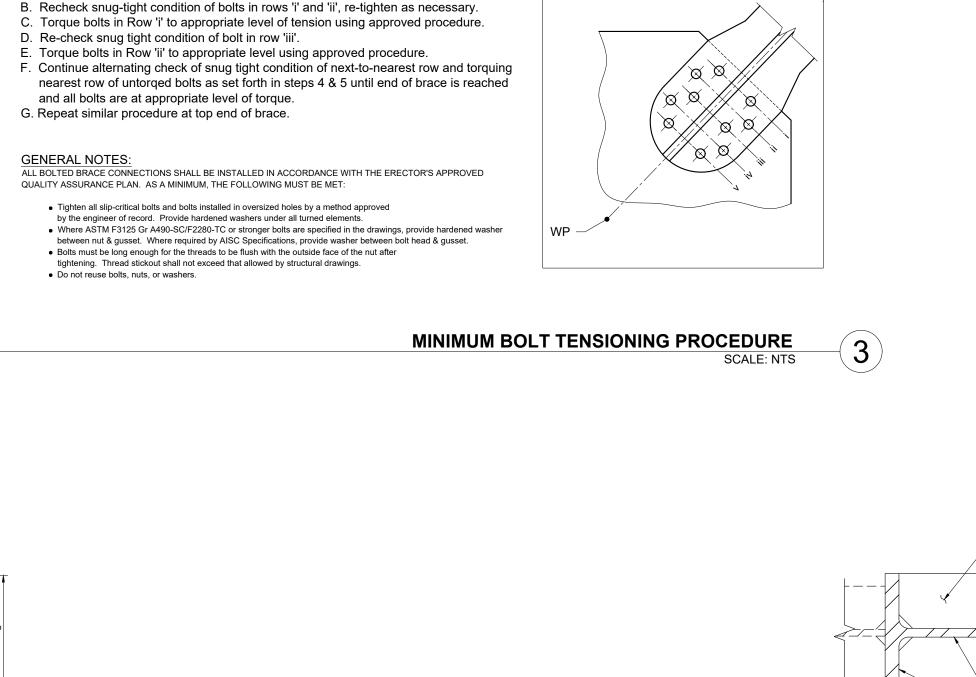
SCALE: NTS

(8) TYP -

FROM TOP

TYPICAL CORE PLATE DETAIL 7





TYPICAL END CONNECTION DETAIL

 $\frac{1}{2}$ " THK STIFF

½" STIFF BOTH-

SEE (5)

SIDES OF GUSSET

SIDES OF GUSSET

BASE PLATE

(SHOWN WITH DOUBLE BOLT ROW, WP AT TOP OF BASE PLATE)

(SHOWN AT WEAK AXIS COLUMN)

TYPICAL CONNECTION AT BASEPLATE 25

 $rac{1}{2}$ " THK STIFF.

PL N&FS

PL N&FS ∖

∕−1/2 NOM BM DEPTH

FROM TOP

W.P. @

FROM TOP

-1/2 NOM BM DEPTH

SCALE: NTS

PLAN VIEW

(TYP) > SEE 10

(TYP)

SEE 10

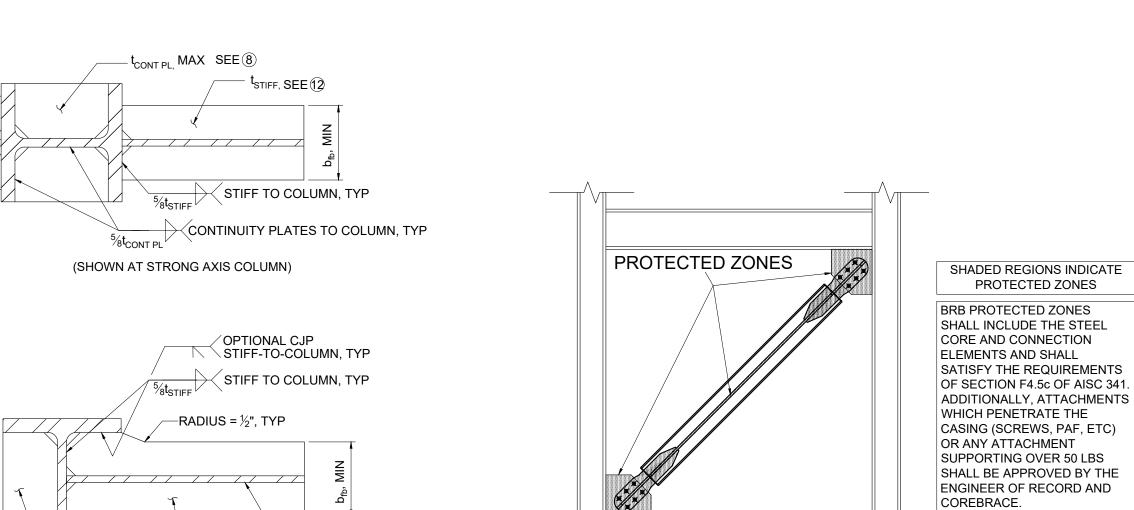
BOLT TENSIONING PROCEDURE

Bolts shall be torqued to achieve the appropriate bolt tension as set forth in the erector's

A. Starting with the most rigid part of the connection (Row 'i') and continuing to the least

approved procedures. As a minimum, the following items shall be adhered to:

rigid part of the connection (Row 'v'), bring all bolts to snug-tight condition.



(STROKE DIM.) AT END CLEARANCE

MAINTAIN 1" AT SIDES AND 3" MIN AT

CONCRETE, TYP.

END CLEARANCE BETWEEN CASING AND

PROVIDE LOW-DENSITY

BRB CASING BURIED IN CONCRETE - TYPICAL DETAIL
SCALE: NTS

EXPANDED POLYSTYRENE

SIDES AND 3" MIN THICK AT END

WHERE BURIED IN CONC, TYP

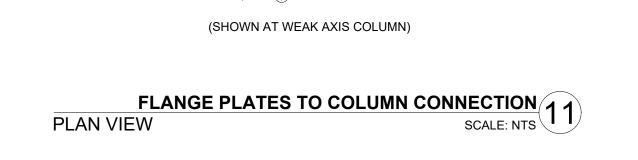
(BEAD BOARD) 1" THICK AT

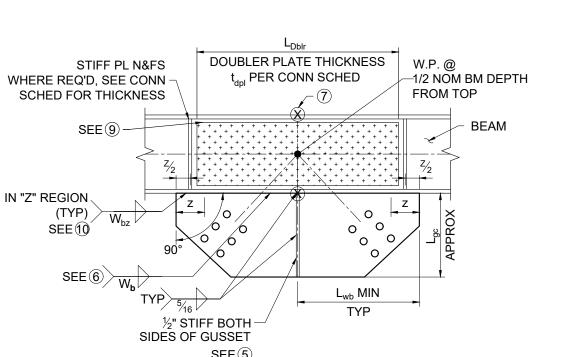
^{∤ C} ∤ BETWEEN CASING AND GUSSET, TYP

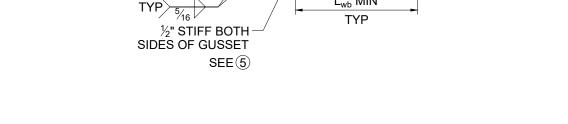
FOAM BOND BREAKER IS TO BE 1" CLEAR ON ALL SIDES OF THE CASING FOR THE PORTION OF THE CASING THAT

EXTENDS DOWN INTO THE SLAB AT STROKE "c" (3" MIN).

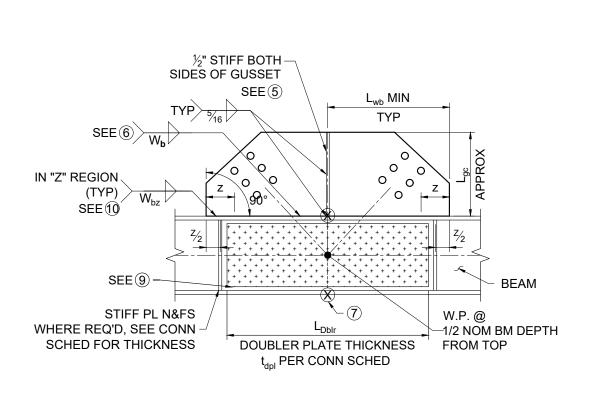
PLAN VIEW



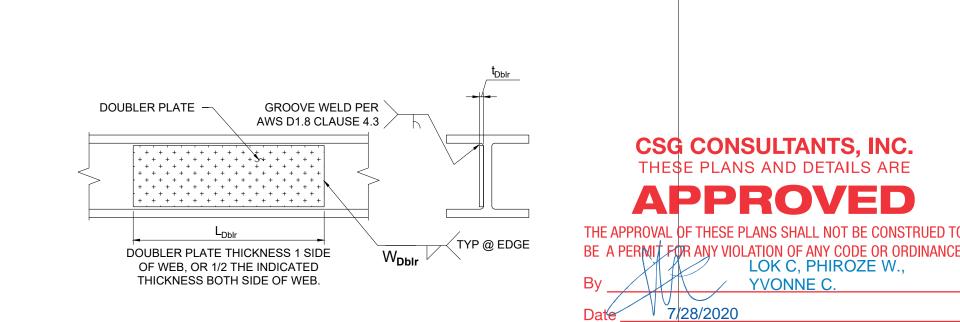




TYPICAL CONNECTION AT CHEVRON TOP W/ DOUBLER 16

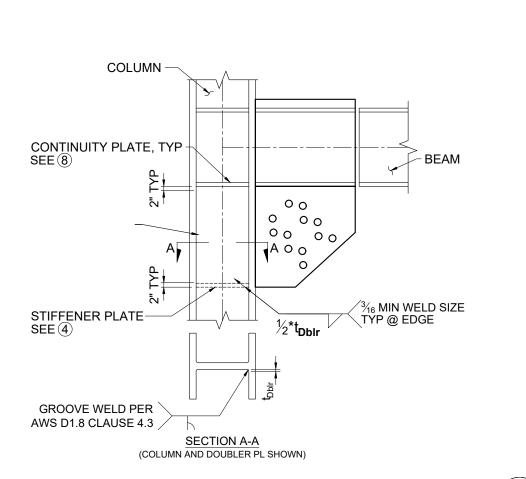


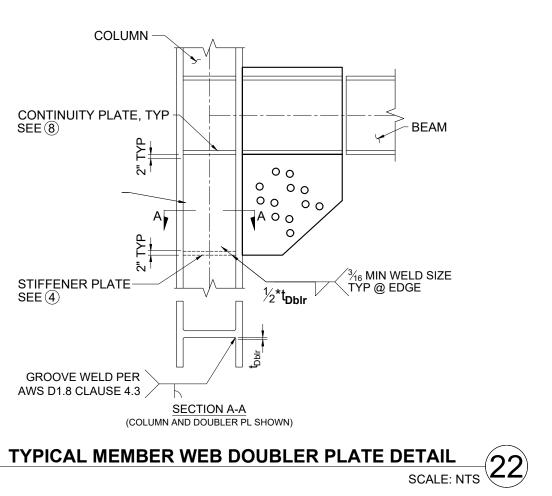
TYPICAL CONNECTION AT 'V' BOTTOM W/ DOUBLER

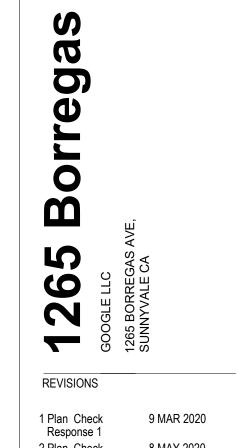


BEAM WEB DOUBLER PLATE DETAIL SCALE: NTS 17

PROTECTED ZONES - AISC 341 SCALE: NTS 12



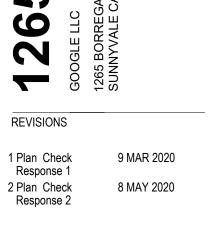


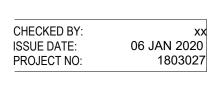


CSG CONSULTANTS, INC.

THE\$E PLANS AND DETAILS ARE

THESE PLANS SHALL BE ON THE JOB FOR ALL REQUESTED INSPECTIONS





									Casing]															Г	F _{ysc}	СВ								
CB-ID	EOR-ID	Line	Grids	Lvis	/lark Qty	L _b	L _c	Туре	H _c W	c t _c	W _T	W _L	W₁ L	·SL	X _L L _{Lg}	а	С	L _{Lc} t	L D	_{wLg} D _{wL}	L _{WL-i}	n _i r	o g	s e	b _r	L _{ysc}	L" _{ysc}	W _{sc}	t _{sc}	A _{sc}	K _{eff}	K _f	P _{ysc} N	lin Max	Wt
# CD 6 00	#		# C C F	#	# #	in 255 6/4	in	t,p	in in	in	in	in	in	n 5	in in	in	in	in ir	n	# #	in	# ;	# in	in ir	in	in	in	in	in	in ²	K/in (K	K _{eff} /K _{Lwp})	kip k	ksi ksi	lb
	BRB-6.00	2	C-C.5 C.5-D		901 1 901 1	355 6/1 355 6/1		t	10 10	0.3750	6.00	7.63 7.63			5.82 16.42 5.82 16.42		3.00	11.82 0.7 11.82 0.7		.00 4.00 .00 4.00	14.82	4 (0.00	4.00 1.6	3 1.02 3 1.02	284.89 284.89		6.000	1.00	6.00	558	1.30	228 3	38 46	4087 4087
CB-16.00	BRB-16.00		C-C.5		902 1	338 1/1	6 274.88		14 14	0.3125	9.14	12.00			6.56 25.09			16.13 1.5		.00 8.00	6.56	5	1.88	5.25 1.6	3.53	243.13	243.13	9.143	1.75	16.00	1648	1.44	608	38 46	7566
	BRB-16.00	2	C.5-D		902 1	338 1/1		t	14 14	0.3125	9.14				6.56 25.09	_	2.25		-	00.8 00.	6.56	5	1.88	5.25 1.6	3.53						1648	1.44	608	38 46	7566
	BRB-18.00	2	C-C.5 C.5-D		903	226 3/1 226 3/1			16 16 16 16						9.69 24 .72 9.69 24 .72					.00 9.00 .00 9.00	200	6	5 3.13 5 3.13	4.00 1.6		124.15 124.15				18.00 18.00	3305	1.70	684	38 46 38 46	6326 6326
	BRB-3.50	7	C-C.5		904 1	195 7/1			8 8	0.2500	4.67				1.07 9.35		3.00			.00 3.00	13.07	2	0.00				142.57	4.667		3.50	605	1.44	133	38 46	1355
	BRB-3.50	7	C.5-D		1904 1	195 7/1			8 8	0.2500	4.67	7.38	5.01 22	.35 4	4.07 9.35	4.00	3.00	10.07 0.5	50 3	.00 3.00	13.07	2	0.00	5.00 1.6	0.96	142.57	142.57	4.667	0.75	3.50	605	1.44	133 3	38 46	1355
	BRB-5.00 BRB-5.00	7	C-C.5 C.5-D		1905	191 14/1 191 14/1			10 10 10 10	0.2500	5.00 5.00	1111	0.10 =		3.98 11.92 3.98 11.92		3.00	0.00		.00 4.00 .00 4.00	12.98	3	$\frac{0.00}{0.00}$	3.75 1.6	3 1.02 3 1.02		134.10 134.10	5.000 5.000	1.00	5.00	906	1.51	190 (38 46 38 46	1970 1970
	BRB-9.00	7	C-C.5	_ -	1906 1	194 10/1		t	12 12	2 0.2500	7.20			· · · · · · · · · · · · · · · · · · ·	7.89 17.8					.00 5.00	7.89	5	0.00	3.25 1.6	3 1.26			7.200	1.25	9.00	1777	1.65	342	38 46	2765
	BRB-9.00	7	C.5-D		906 1	194 10/1	300 300 300 300 300		12 12	0.2500	7.20			2.31 7		1 4.00				.00 5.00	7.89	5	0.00	 		114.25			+•		1777	1.65	342	38 46	2765
	BRB-9.00 BRB-9.00	7	C-C.5 C.5-D		907	188 14/1 188 14/1		t	12 12	2 0.2500 2 0.2500	7.20 7.20	8.88 8.88	8.56 32 8.56 32	31 7	7.89 17.8 ⁹ 7.89 17.8 ⁹		3.00	15.39 0.7 15.39 0.7	75 5.	00 5.00	7.89	5	$\frac{0.00}{0.00}$	3.25 1.6	3 1.26	108.47	108.47	7.200	1.25	9.00	1839	1.70	342	38 46 38 46	2672 2672
	BRB-14.00	7	C-C.5		908 1	204 13/1		t	14 14		2	0.00	0.00	.96 7	7.12 24 .30				25 5	00 8.00	7.12	4	4 0.88	5.75 1.6	3 2.27	108.66	108.66	9.333	1.50	14.00	2831	1.69	532	38 46	4111
	BRB-14.00	7	C.5-D		908 1	204 13/1			14 14		9.33		-		7.12 24.30			16.72 1.2	25 5	.00 8.00	7.12	4	4 0.88				108.66		1.50		2831	1.69	532	38 46	4111
	BRB-4.00 BRB-4.00	8	C-C.5 C.5-D		909	194 15/1 194 15/1			10 10 10 10	0.2500	5.25 5.25				5.58 14.42 5.58 14.42			11.58 0.5 11.58 0.5	50 3. 50 3.	.00 3.00 .00 3.00	5.58 5.58	3 (0.00	+		+	112.82 112.82	4.000	1.00	4.00	782	1.63	152	38 46 38 46	1919 1919
	BRB-7.00	8	C-C.5		910 1	194 13/	147.38		10 10	0.2500	5.60	8.88	7.07 29	0.06 6	6.02 14.50					.00 5.00	6.02	4	0.00	3.25 1.6	3 1.26	120.94	120.82	5.600	1.25		1345	1.60	266	38 46	2062
	BRB-7.00	8	C.5-D		910 1		147.38	t	10 10	0.2500	5.60	8.88	7.07 29	.06 6	0.02 14.00	0 4.00	3.00	13.32 0.7	75 4.	.00 5.00	6.02	4	0.00	3.25 1.6	3 1.26	120.82	120.02	5.600	1.25	7.00	1345	1.60	266 3	38 46	2062
CB-9.50 CB-9.50		8	C-C.5 C.5-D		911	194 4/1 194 4/1		t	14 14	0.3125	7.60	9.00	7.35 35	60 6	6.38 21.10 3.29 21.10	0 4.00	3.00	13.88 1.0	00 5	00 6.00	6.38	6	0.00	3.25 1.6	3 1.28	110.33	110.33 110.33	7.600	1.25	9.50	1944	1.71	361 3	38 46	3576 3576
	BRB-11.00	8	C-C.5		912 1	188 13/1	100 100 100 100 100 100 100 100 100 100	t	12 12	2 0.2500	7.33	9.00	7.45 37	7.70 6	6.19 21.10	0 4.00	3.00	15.79 1.2	25 5	.00 7.00	6.19	6	0.00	3.25 1.6	3 1.28	101.04	101.04	7.800	1.50	11.00	2382	1.81	418	38 46	2920
CB-11.00	BRB-11.00		C.5-D		912 1	188 13/1	6 132.13	_ `	12 12	2 0.2500	7.33	9.00	7.45 37	7.70 6	6.19 21.10	0 4.00	3.00	15.79 1.2	25 5	.00 7.00	6.19	6	0.00	3.25 1.6	3 1.28	101.04	101.04	7.333	1.50	11.00	2382	1.81	418 3	38 46	2920
	BRB-18.00	8	C-C.5		913 1	203 5/1			16 16	0.3125	10.29		10.50 41	.10 9	9.69 24.72	2 4.00	2.25	19.81 1.5	50 6.	00 9.00	9.69	6	5 3.13	4.00 1.6	3 4.15	101.72	101.72	10.286	1.75	18.00	3868	1.80	684	38 46	5657
	BRB-18.00 BRB-6.00	2	C.5-D J-J.5		913	203 5/1 355 6/1			10 10	0.3125	6.00	14.50 7.63	6.65 29	42 5	5.82 16.42	2 4.00	3.00	11.82 0.7	75 4	00 4.00	14.82	4	0.00	4.00 1.6	3 4.13	284.89	284.89	6.000	1.75	6.00	558	1.30	228 3	38 46 38 46	5657 4087
	BRB-6.00	2	J.5-H	_	901 1	355 6/1	6 308.00	t	10 10	0.3750	6.00	7.63	6.65 29	.42 5	5.82 16.42	2 4.00	3.00	11.82 0.7	75 4	.00 4.00	14.82	4	0.00	4.00 1.6	3 1.02	284.89	284.89	6.000	1.00	6.00	558	1.30	228	38 46	4087
	BRB-16.00		J-J.5		1902 1	338 1/1	6 274.88	t	14 14	0.3125	9.14	12.00	8.00 40	.90 6	6.56 25.09		2.25	16.13 1.5	50 5	00.8 00.	6.56	5	1.88	5.25 1.6	3.53	243.13	243.13	9.143	1.75	16.00	1648	1.44	608	38 46	7566 7566
	BRB-16.00	2 2	J.5-H J-J.5	+ +	902	338 1/1 217 10/1			14 14 16 1 6	0.3125	9.14	12.00 14.50	8.00 40 10.50 41	.90 6 . 32 9	6.56 25.09 2.69 24.7 3	9 4.00 2 4.00	2.25	16.13 1.5 20.04 1.5	50 5.	.00 8.00 .00 9.00	9.69	6	1 1.88 5 3.13	5.25 1.6 4.00 1.6	3.53 3 4.15	243.13 115.60	115.60	9.143 10.286	1.75	16.00 18.00	3497	1.44	608 3 684 3	38 46 B	7566 6078
CB-18.00		2	J.5-H		1914 1	217 10/1			16 16	0.3125	10.29	14.50	10.50 41	.32 9	9.69 24.72	2 4.00	2.25	20.04 1.5	50 6	.00 9.00	9.69	6	5 3.13	4.00 1.6	3 4.15	115.60	115.60	10.286	1.75	18.00	3497	1.73	684	38 46	6078
	BRB-3.50	7	J-J.5		1915 1	197 2/1	 	t	8 8	0.2500	4.67	7.38	5.01 22	.35 4	1.07 9.35	4.00	3.00	10.07 0.5	50 3	.00 3.00	13.07	2	0.00	5.00 1.6	0.96	144.26	144.26	4.667	0.75	3.50	599	1.44	133	38 46	1367
	BRB-3.50 BRB-5.00	7	J.5-H J-J.5		1915	197 2/1 194	6 163.94 155.69	t	8 8	0.2500	4.6 <i>7</i> 5.00	7.38	5.01 22	35 4	1.07 9.35 3.98 11.99	2 4.00	3.00	9 98 0	50 3. 75 4	00 3.00	13.07	3	$\frac{0.00}{0.00}$	3.75 1.6	3 0.96	136 23	144.26 136.23	4.667 5.000	1.00	5.00	894	1.44	133 3	38 46 38 46	136 <i>7</i> 1994
	BRB-5.00	7	J.5-H		1916 1	194	155.69		10 10	0.2500	5.00	7.63	5.18 24	.92 3	3.98 11.92	2 4.00	3.00	9.98 0.7	75 4	.00 4.00	12.98	3	0.00	3.75 1.6	3 1.02	136.23	136.23	5.000	1.00	5.00	894	1.50	190	38 46	1994
CB-9.00	BRB-9.00	7	J-J.5		1917 1	196 5/1		•	14 14	0.3125	7.20	8.88	8.56 32	.31 7	7.89 17.8	1 4.00	3.00	15.39 0.7	75 5	.00 5.00	7.89	5 (0.00	3.25 1.6	3 1.26	115.91	115.91	7.200	1.25		1756	1.64	342 3	38 46	3602
CB-9.00 CB-9.00	BRB-9.00 BRB-9.00	7	J.5-H J-J.5		917	196 5/ 1	6 146.19 140.94	t	14 14	0.3125	7.20	8.88	8.56 32	31 7	7.89 17.8°	1 4.00	3.00	15.39 0.7	75 5. 75 5	00 5.00	7.89	5 ($\frac{0.00}{0.00}$	3.25 1.6	3 1.26	115.91	115.91 110.63	7.200	1.25	9.00	1756 1811	1. 64	342 3	38 46 38 46	3602 3488
	BRB-9.00	7	J.5-H		1918 1	191	140.94	t	14 14	0.3125	7.20	8.88	8.56 32	.31 7	7.89 17.8°	1 4.00	3.00	15.39 0.7	75 5.	.00 5.00	7.89	5 (0.00	3.25 1.6	3 1.26	110.63	110.63	7.200	1.25	9.00	1811	1.69	342	38 46	3488
	BRB-14.00	7	J-J.5		919 1	208 5/1		t	14 14	0.3125	9.33	9.75	8.13 40	.96 7	7.04 24.30	6 4.00	3.00	16.64 1.2	25 5	00.8 00	7.04	4	4 0.88	5.75 1.6	3 2.27	112.32	112.32	9.333	1.50	14.00	2763	1.67	532	38 46	4188
	BRB-14.00 BRB-4.00	7	J.5-H J-J.5		919	208 5/1 196 12/1		t	14 14 10 10	0.3125	9.33	9.75	8.13 40 6.47 27	. 96 7	7. 04 24.3 0	6 4.00 2 4.00	3.00	16.64 1.2	25 5. 50 3	00 8.00	7. 04	3	4 0.88	5.75 1.6	3 2.27	112.32	112.32	9.333	1.50	14.00 3	772	1.67	152	38 46 B8 46	4188 1940
CB-4.00	BRB-4.00	8	J.5-H		1920 1	196 12/1		t	10 10	0.2500	5.25	7.63	6.47 27	.42 5	5.58 14.42	2 4.00	3.00	11.58 0.5	50 3	.00 3.00	5.58	3	0.00	5.00 1.6	3 1.02	130.75	114.63	4.000	1.00	4.00	772	1.62	152	38 46	1940
CB-7.00		8	J-J.5		921 1	192 12/1		t	10 10	0.2500	5.60	8.88	7.07 29	.06 6	3.02 14.50	6 4.00	3.00	13.52 0.7	75 4.	.00 5.00	6.02	4	0.00	3.25 1.6	3 1.26	122.57	122.57	5.600	1.25	7.00	1329	1.60	266 3	38 46	2083
CB-7.00 CB-9.50	+	8	J.5-H J-J.5		1921	192 12/1 195 15/ 1		t	10 10	0.2500	5.60 7.60	9.00	7.07 29	60 6	5.02 14.50 5.38 21.10	0 4.00	3.00	13.52 0.7	75 4. 00 5	00 5.00	6.02	6	$\frac{0.00}{0.00}$	3.25 1.6	3 1.26 3 1.28	122.57 111.99	122.57 111.99	7 600	1.25	9.50	1329 1921	1.60 1.70	361	38 46 B	2083 2841
CB-9.50		8	J.5-H		1922 1	195 15/1	0 .00.20	t	12 12	2 0.2500	7.60	9.00	7.35 35	.60 6	6.38 21.10	0 4.00	3.00	13.88 1.0	00 5	.00 6.00	6.38	6	0.00	3.25 1.6	3 1.28	111.99	111.99	7.600	1.25	9.50	1921	1.70	361	38 46	2841
	BRB-11.00		J-J.5		1923 1	191	134.25		12 12	0.2500	7.33	9.00	7.38 37	7.70 6	5.11 21.10	0 4.00	3.00	15.71 1.2	25 5	.00 7.00	6.11	6	0.00	3.25 1.6	3 1.28	103.37	103.37	7.333	1.50	11.00	2339	1.79	418 3	38 46	2954
	BRB-11.00 BRB-18.00	8	J.5-H J-J.5		1923	191 205 11/ 1	134.25 6 143.25	t	16 16	0.2500	10.29	9.00 14.50	7.38 37 10.50 41	.10 6	9.69 24.7 2	2 4.00	0.00	15.71 1.2 19.81 1.5	25 5. 50 6 .	.00 7.00 .00 9.00	9.69	6	5 0.00 5 3.13	4.00 1.6	3 4.15	103.37 104.11	103.37 104.11	10.286	1.50 1.75	11.00	3802	1.79 1.78	684 3	38 46 B	2954 5726
CB-18.00	BRB-18.00	8	J.5-H		1924 1	205 11/1	6 143.25	t	16 16	0.3125	10.29	14.50	10.50 41	.10 9	9.69 24.72	2 4.00		19.81 1.	50 6.	.00 9.00	9.69	6	5 3.13	4.00 1.6	3 4.15	104.11	104.11	10.286	1.75	18.00	3802	1.78	684	38 46	5726
	BRB-8.00	J	8-7.5 7.5-7		1925	183 14/1 183 14/1		t	10 10	0.2500	6.40	8.88	7.81 32	31 6	6.96 17.8°	1 4.00	3.00	11110		0.00	6.96	5	0.00	3.25 1.6	3 1.26	105.36	105.36	6.400	1.25	8.00	1697	1.68	304	38 46	1985 1985
	BRB-10.00	J	8-7.5		1926 1	176 1/1	6 119.31	t	12 12	2 0.2500	8.00	9.00	6.84 36	5.50 5	5.74 21.10	0 4.00	0.00	14.14 1.2	25 5.	.00 7.00	5.74	6	0.00	3.25 1.6	3 1.28	91.56	91.56	8.000	1.25	10.00	2368	1.87	380	38 46	2646
	BRB-10.00		7.5-7		1926 1	176 1/1	6 119.31	t	12 12	2 0.2500	8.00	9.00	6.84 36	.50 5	5.74 21.10	0 4.00	3.00	14.14 1.2	25 5	.00 7.00	5.74	6	0.00	3.25 1.6	3 1.28	91.56	91.56	8.000	1.25	10.00	2368	1.87	380 3	38 46	2646
	BRB-17.00 BRB-17.00		8-7.5 7.5-7		1927	178 3/1 178 3/1		t	14 14	0.3125	9.71 9.71	12.00	9.69 40	72 8	3.68 25.4 3.68 25.4		2.25	17.68 1.5	50 5	00 11.00	8.68	5 5	5 1.88	4.75 1.6	3.53	79.38	79.38 79.38	9.714	 	17.00	4345	2.02	646	38 46	3959 3959
	BRB-18.00		8-7.5		1928 1	171 10/1		t	16 16	6 0.3125					9.69 24.7 2		2.25	18.13 1.5	50 6 .	. 00 11.00	9.69	6	5 3.13	4.00 1.6	3 4.15	73.45	73.45	10.286	1111		4842	2.13	684	38 46	4697
	BRB-18.00	J	7.5-7		928 1	171 10/1		t	16 16	0.3125					9.69 24.72		2.25	18.13 1.5	50 6 .		0.00	6	5 3.13	4.00 1.6	3 4.15	73.45	73.45	10.286		70.00	4842	2.13	684 3	38 46	4697
	BRB-24.00	J	8-7.5 7.5-7		1929	203 14/1		t	18 18 18 19	0.3750 0.3750	12.00 12.00		11.00 43 11.00 43		0.00 25.14 0.00 25.14		2.25	21.25 1.7 21.25 1.7	75 7.	.00 12.00 .00 12.00		7	3.69 3 3.60	3.25 1.6	3.98 3 3.98	96.60	96.60 96.60	12.000 12.000	2.00	24.00	5151 5151	1.85	912	38 46	7321 7321
		G	8-7.5		1930 1	185 5/1		t	10 10	0.2500	5.00	7.63	11100 10		3.75 11.92	0.00				.00 4.00	3.75	3	0.00	3.75 1.6	3 1.02	127.94	127.94	5.000	1.00	5.00	945	1.49	190	38 46	1894
CB-5.00		G	7.5-7		1930 1	185 5/1		t	10 10	0.2500	5.00	7.63	5.00 24	.92 3	3.75 11.92	2 4.00	3.00	9.75 0.7	75 4.	00 4.00	3.75	3	0.00	3.75 1.6	3 1.02	127.94	127.94	5.000	1.00	5.00	945	1.49	190 3	38 46	1894
CB-7.50 CB-7.50		G	8-7.5 7.5-7		931	176 8/1 176 8/1			10 10 10 10	0.2500	6.00 6.00	8.88 8.88			6.49 15.3° 6.49 15.3°		3.00	13.99 0.7	, 	.00 5.00 .00 5.00	6.49 6.49	4 4	0.00	3.50 1.6	3 1.26 3 1.26	103.93	103.93	6.000	1.25	7.50	1610	1.70	285	38 46	1906 1906
CB-11.00	BRB-11.00		8-7.5	3	1932 1	184 15/1	6 128.19	t	12 12	2 0.2500	7.33	9.00	7.37 37	7.70 6	6.09 21.10	0 4.00	3.00	15.69 1.2	25 5	.00 7.00	6.09	6	0.00	3.25 1.6	3 1.28	97.34	97.34	7.333	1.50	11.00	2470	1.78	418	38 46	2854
	BRB-11.00		7.5-7		1932 1	184 15/1		t	12 12	0.2500	7.33	9.00	7.37 37	7.70 6	6.09 21.10	0 4.00	3.00	15.69 1.2	25 5	00 7.00	6.09	6	0.00	3.25 1.6	3 1.28	97.34	97.34	7.333	1.50	11.00	2470	1.78	418	38 46	2854
	BRB-11.00 BRB-11.00		8-7.5 7.5-7		1933	175 6/1 175 6/1	6 118.69 6 118.69	t	12 12	2 0.2500	7.33 7.33	9.00	7.62 37	.70 6 .70 6	6.41 21.10 6.41 21.10	0 4.00	3.00	16.01 1.2	25 5. 25 5.	.00 7.00	6.41	6	0.00	3.25 1.6	3 1.28 3 1.28	87.15	87.15 87.15	7.333	1.50	11.00	2663 2663	1.91	418	38 46	2701 2701
	BRB-12.00		8-7.5		1934 1	206 4/1	0 110.00	t	12 12	2 0.2500	8.00	9.00	8.83 41	.25 7	7.92 24.3	5 4.00	3.00	17.82 1.0	00 5	.00 6.00	7.92	7	0.00	3.25 1.6	3 1.28	107.93	107.93	8.000	1.50	12.00	2428	1.71	456	38 46	3105
	BRB-12.00	G	7.5-7		1934 1	206 4/1		t	12 12	0.2500	8.00	9.00	8.83 41	.25 7	7.92 24.3	5 4.00	3.00	17.82 1.0	00 5	.00 6.00	7.92	7	0.00	3.25 1.6	3 1.28	107.93	107.93	8.000	1.50	12.00	2428	1.71	456	38 46	3105
CB-5.00	-	<u>E</u>	8-7.5 7.5-7		930	185 5/1 185 5/1		t	10 10	0.2500	5.00	7.63	5.00 24 5.00 24	.92 3	3.75 11.92 3.75 11.92	2 4.00 2 4.00	3.00	9.75 0.7	75 4.	00 4.00	3.75	3	0.00	3./5 1.6	3 1.02 3 1.02	127.94	127.94 127.94	5.000 5.000	1.00	5.00	945	1.49	190 (38 46	1894
CB-7.50		E	8-7.5		1931 1	176 8/1			10 10	0.2500	6.00	8.88	7.44 29	.81 6	6.49 15.3°	1 4.00	3.00	13.99 0.7	75 4	.00 5.00	6.49	4 (0.00	3.50 1.6	3 1.26	103.93	103.93	6.000	1.25	7.50	1610	1.70	285	38 46	1906
		E	7.5-7		1931 1	176 8/1		t	10 10	0.2500	6.00	8.88	7.44 29				3.00	13.99 0.7	75 4	00 5.00	6.49	4	0.00	3.50 1.6	3 1.26	103.93	103.93	6.000	1.25	7.50	1610	1.70	285	38 46	1906
	BRB-11.00 BRB-11.00		8-7.5 7.5-7		932	184 15/1 184 15/1		t	12 12	2 0.2500 2 0.2500	7.33 7.33	9.00	7.37 37 7.37 37	·· •	6.09 21.10 6.09 21.10		0.00	15.69 1.2 15.69 1.2	25 5 25 5	00 7.00	6.09 6.00	6	0.00	3.25 1.6	3 1.28	97.34 97.34	97.34 97.34	7.333	1.50	11.00	2470 2470	1./8	418 3	38 46	2854 2854
	BRB-11.00		8-7.5		1932 1	175 6/1	6 118.69	t	12 12	2 0.2500	7.33	9.00	7.62 37	7.70 6	6.41 21.10	0 4.00	3.00	16.01 1.2	25 5	.00 7.00	6.41	6	0.00	3.25 1.6	3 1.28	87.15	87.15	7.333	1.50	11.00	2663	1.91	418	38 46	2701
CB-11.00	BRB-11.00	E	7.5-7	2	1933 1	175 6/1		t	12 12	0.2500	7.33	9.00	7.62 37	7.70 6	6.41 21.10	0 4.00	3.00	16.01 1.2	25 5	00 7.00	6.41	6	0.00	3.25 1.6	3 1.28	87.15	87.15	7.333	1.50	11.00	2663	1.91	418 3	38 46	2701
	BRB-12.00 BRB-12.00		8-7.5 7.5-7		934	206 4/1		t +	12 12	0.2500	8.00	9.00	8.83 41	.25 7	7.92 24.35 7.92 24.35	5 4.00 5 4.00	3.00	17.82 1.0	00 5. 00 5	00 6.00	7.92	7	0.00	3.25 1.6	3 1.28	107.93	107.93 107.93	8.000 8 nnn	1.50	12.00	2428	1.71	456	38 46	3105 3105
	BRB-8.00	c	8-7.5		1925 1	183 14/1		t	10 10	0.2500	6.40	8.88	7.81 32	2.31 6	6.96 17.8°	1 4.00	3.00	14.46 0.7	75 4	.00 5.00	6.96	5	0.00	3.25 1.6 3.25 1.6	3 1.26	105.36	105.36	6.400	1.25	8.00	1697	1.68	304	38 46	1985
CB-8.00	BRB-8.00	С	7.5-7		1925 1	183 14/1		t	10 10	0.2500	6.40	8.88	7.81 32	.31 6	6.96 17.8	1 4.00	3.00	14.46 0.7	75 4	.00 5.00	6.96	5	0.00	3.25 1.6	3 1.26	105.36	105.36	6.400	1.25	8.00	1697	1.68	304	38 46	1985
	BRB-10.00 BRB-10.00		8-7.5 7.5-7		1926	176 1/1 176 1/1	6 119.31 6 119.31	t t	12 12	0.2500	8.00	9.00	6.84 36	50 5	5.74 21.10 5.74 21.10	0 4.00	3.00	14.14 1.2	25 5. 25 5	00 7.00	5.74	6	0.00	3.25 1.6	3 1.28	91.56	91.56	8.000 8 nnn	1.25	10.00	2368	1.87	380 3	38 46	2646 2646
	BRB-17.00		8-7.5		1935 1	178 8/1		t	14 14	0.3125	9.71	12.00	9.69 40	.72 8	3.68 25.4 ⁷	7 4.00	2.25	17.68 1.5	50 5	.00 11.00	8.68	5	5 1.88	4.75	3 3.53	79.69	79.69	9.714	1.75	17.00	4335	2.02	646	38 46	3966
CB-17.00	BRB-17.00	С	7.5-7	3	1935 1	178 8/1	6 114.56	_	14 14	0.3125	9.71	12.00	9.69 40	.72 8	3.68 25.4	7 4.00	2.25	17.68 1.5	50 5	.00 11.00	8.68	5	5 1.88	4.75 1.6	3.53	79.69	79.69	9.714	1	17.00	4335	2.02	646	38 46	3966
	BRB-18.00 BRB-18.00		8-7.5 7.5-7		1928	171 10/1 171 10/1	6 109.19 6 109.19	t	16 16	0.3125	10.29	14.50	10.50 39	.41 9	9.69 24.72 9.69 24.72		2.25	18.13 1.5 18.13 4.7	50 6	.00 11.00	9.69	6	5 3.13 5 3.13	4.00 1.6	3 4.15	73.45	73.45 73.45	10.286		10.00	4842 4842	2.13	684	38 46	4697 4697
CB-24.00	BRB-24.00	С	8-7.5	_				t t	18 18	3 0.3750	12.00	16.00	11.00 43	.64 10			2.25	21.25 1.7	75 7 .	.00 7.00	23.50	7			3 3.98	96.60	96.60	10.200 12.000				1.85	912	38 46	7321
CB-24.00	BRB-24.00	С	7.5-7	G	1936 1	203 14/1	6 138.63	t	18 18	0.3750	12.00	16.00	11.00 43	.64 10	0.00 25.14	4 5.00	2.25	21.25 1.7	75 7.	.00 7.00	23.50	7	3.69	3.25 1.6 3.25 1.6	3.98	96.60	96.60	12.000	2.00	24.00	5151	1.85	912	38 46	7321

Table of Symbols

 L_b = Length of CB tip to tip L_c = Length of casing

Shaded Cells Reflect Rev 2 Changes

Casing = Size & type of casing **Type** = t = tube (HSS) and p = pipe \mathbf{W}_{L} = Width of Lug

W₁ = Width at Reduced Section of Lug L_{SL} = Total Length of Lug minus Transition (xL) \mathbf{x}_{L} = Length from start of lug transition to end of lug transition

 \mathbf{L}_{Lg} = Length of Lap on Gusset a = Gap between core and gusset

c = Core extension length out of casing

 L_{Lc} = Length of Lug within Casing (incl. xL) \mathbf{t}_{L} = Thickness of lug

 \mathbf{D}_{wLg} = Size of weld at lug to core at bolt pattern # 1/16ths D_{wL} = Size of weld at lug to core beyond bolt pattern # 1/16ths

 L_{WL-i} = Weld length required at inside face of lug

 n_i = Number of bolts in inner row

n_o = Number of bolts in outer row **g** = Gauge between outer & inner bolt rows

s = Bolt Spacing

e = Typical bolt edge distance $\mathbf{b_r}$ = Distance to start of radius from first outermost bolt.

(If negative it is towards end of CB from bolt.) L_{ysc} = Length of yielding core w/out allowance for Cntr Stiffener L"_{ysc} = Yield length of core - Yielding Portion Only W_{sc} = Width of core at yield section

 \mathbf{t}_{sc} = Thickness of core

 A_{sc} = Cross sectional area of core at yield section $\mathbf{K}_{\mathsf{eff}}$ = Effective Stiffness of BRB from WP to WP Sum --> 322,071 lbs

Max --> 7,566 lbs

K_f = Axial Stiffness Adjustment Factor P_{ysc} = Yield force of CB ($A_{sc} \times F_{ysc}$ min)

 \mathbf{F}_{ysc} = Specified yield stress range of core plate

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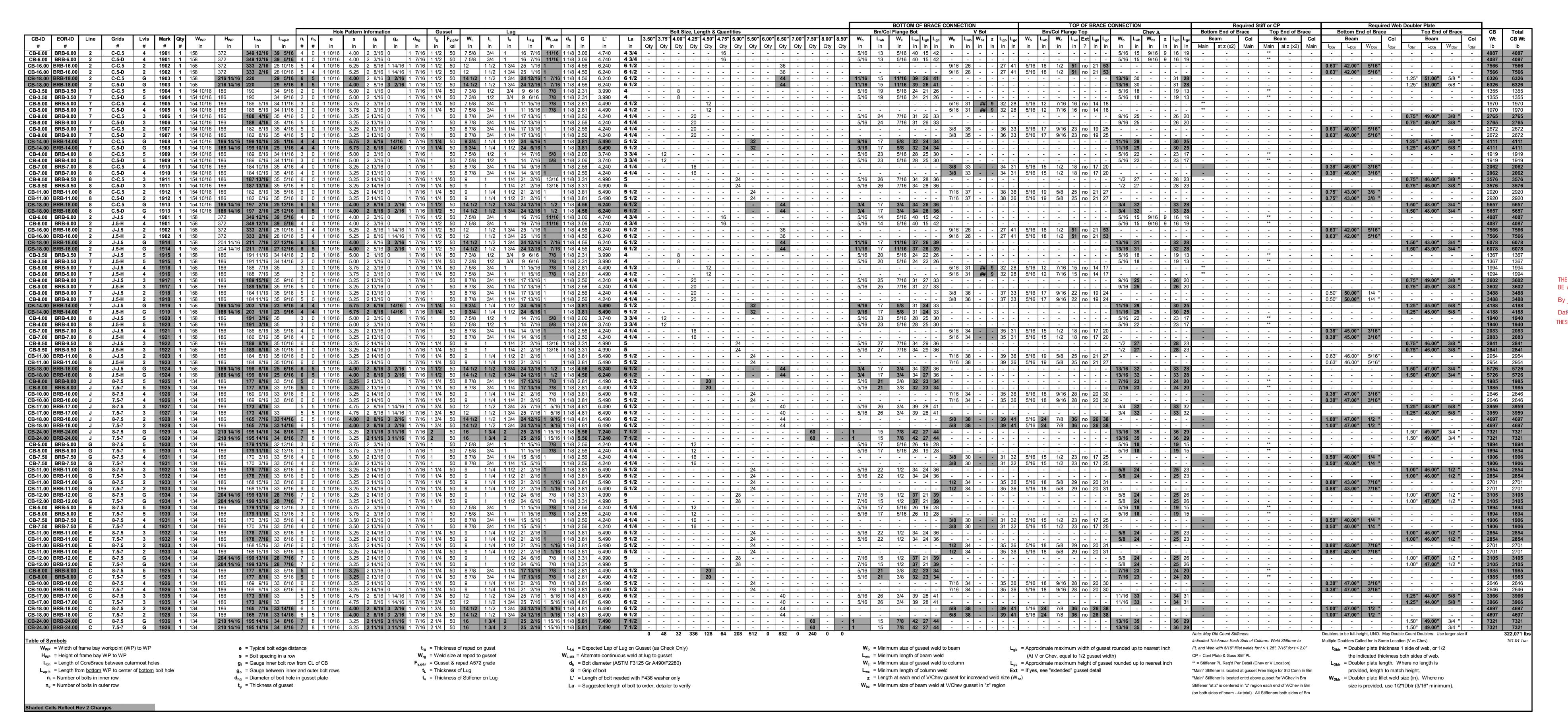


1265 BORREGAS AV SUNNYVALE CA

CHECKED BY: ISSUE DATE: PROJECT NO: 06 JAN 2020 1803027









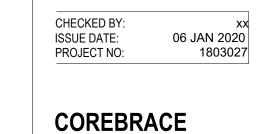




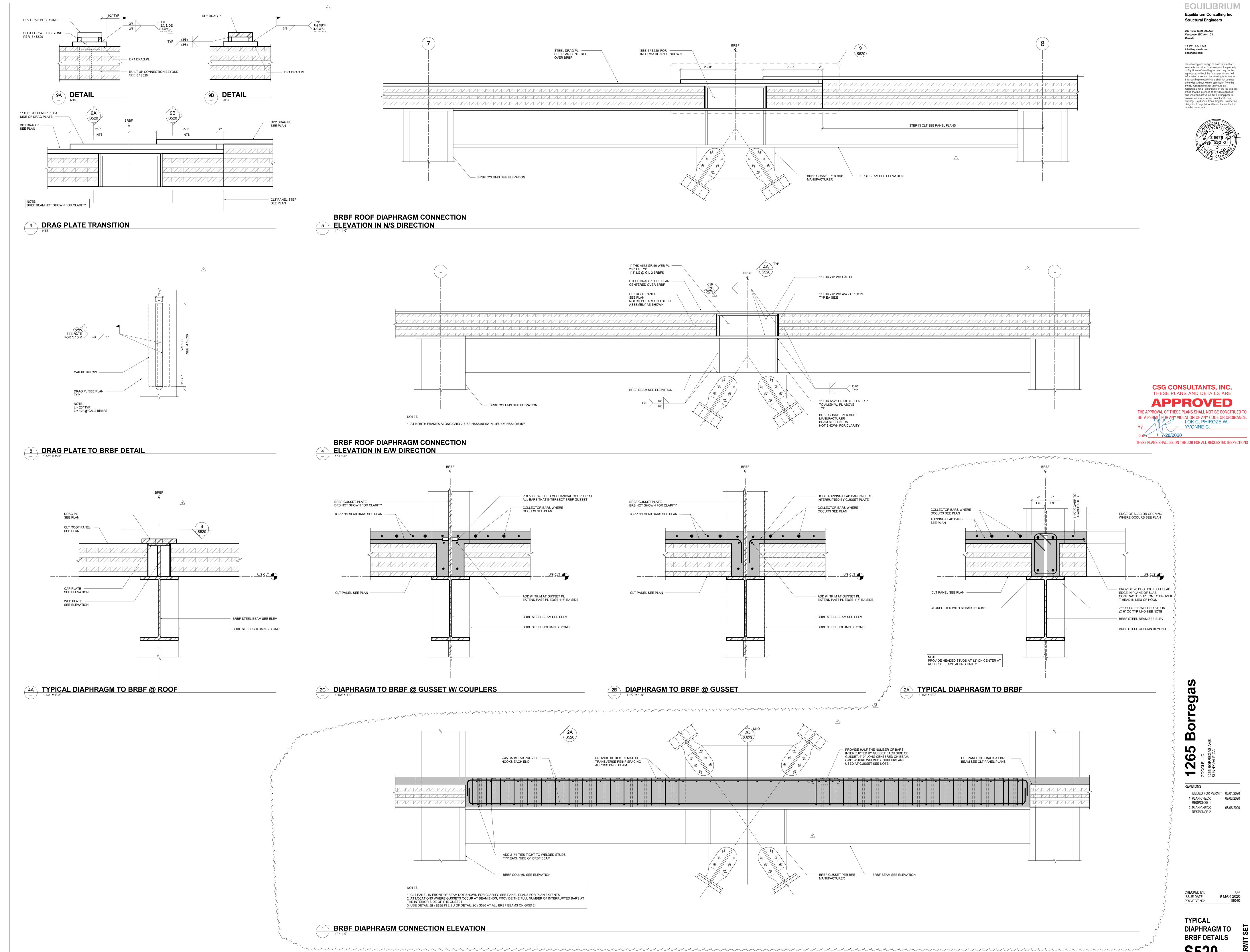
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REVISIONS

1 Plan Check



BRB SCHEDULES

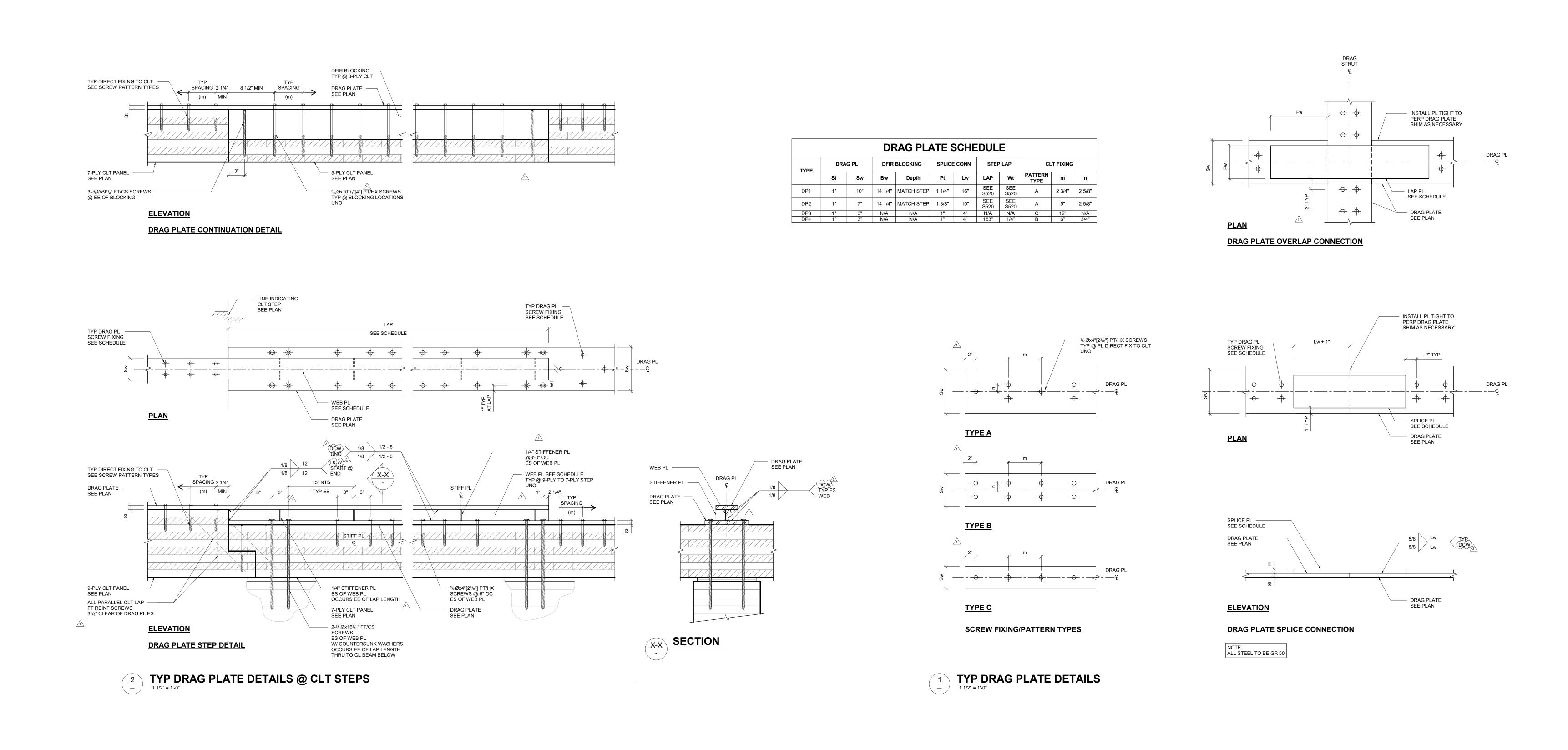


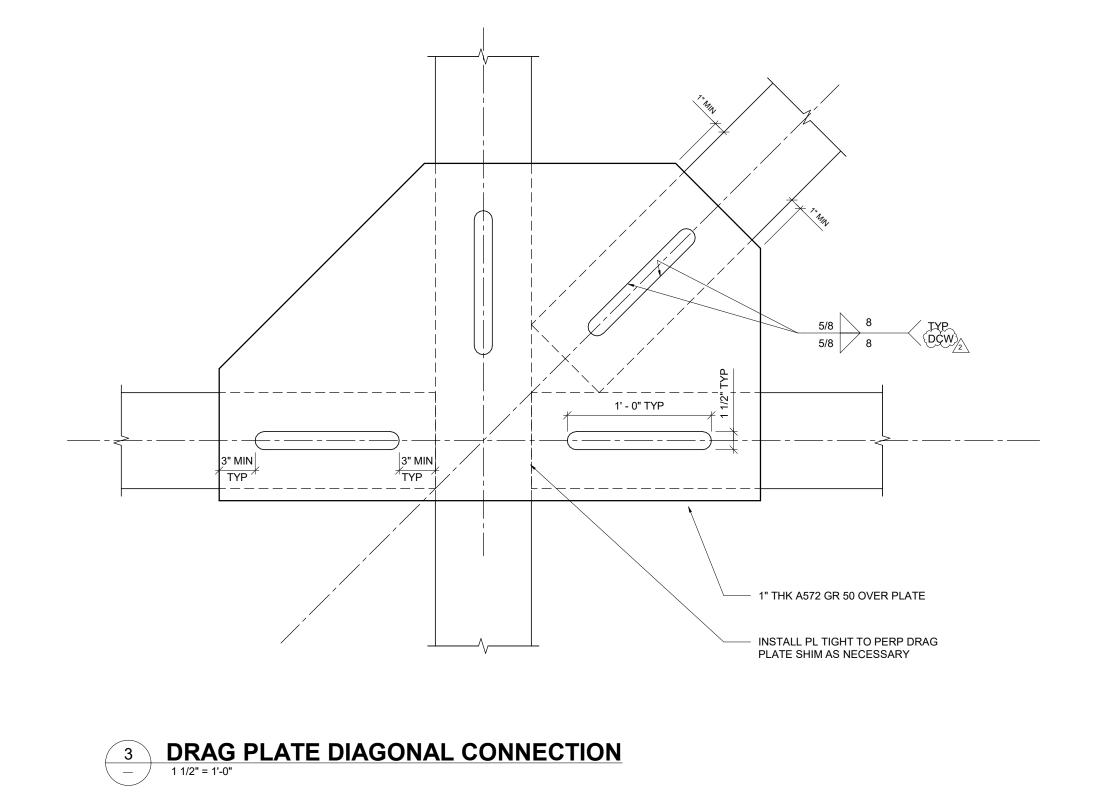
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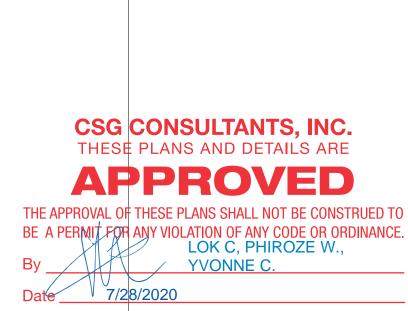


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DIAPHRAGM TO







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or sub-contractors.

THESE PLANS SHALL BE ON THE JOB FOR ALL REQUESTED INSPECTIONS

265

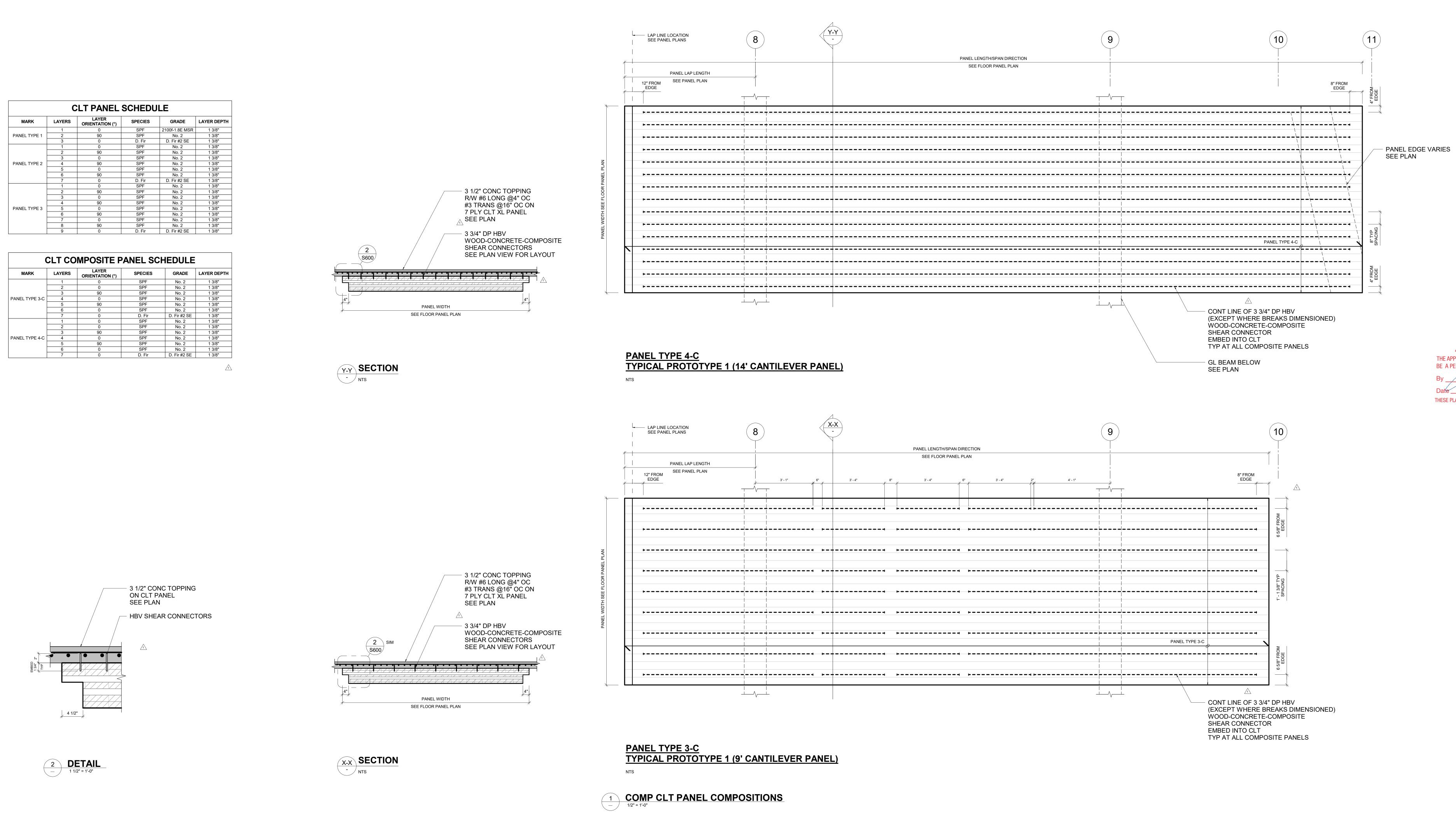
REVISIONS ISSUED FOR PERMIT 06/01/2020 1 PLAN CHECK RESPONSE 1 2 PLAN CHECK RESPONSE 2

09/03/2020

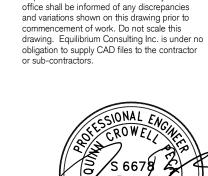
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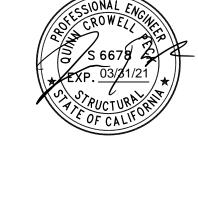
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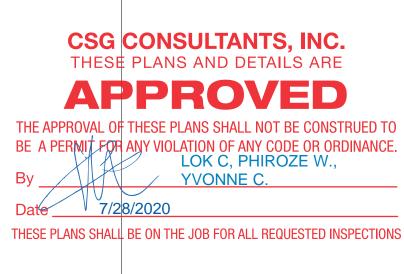
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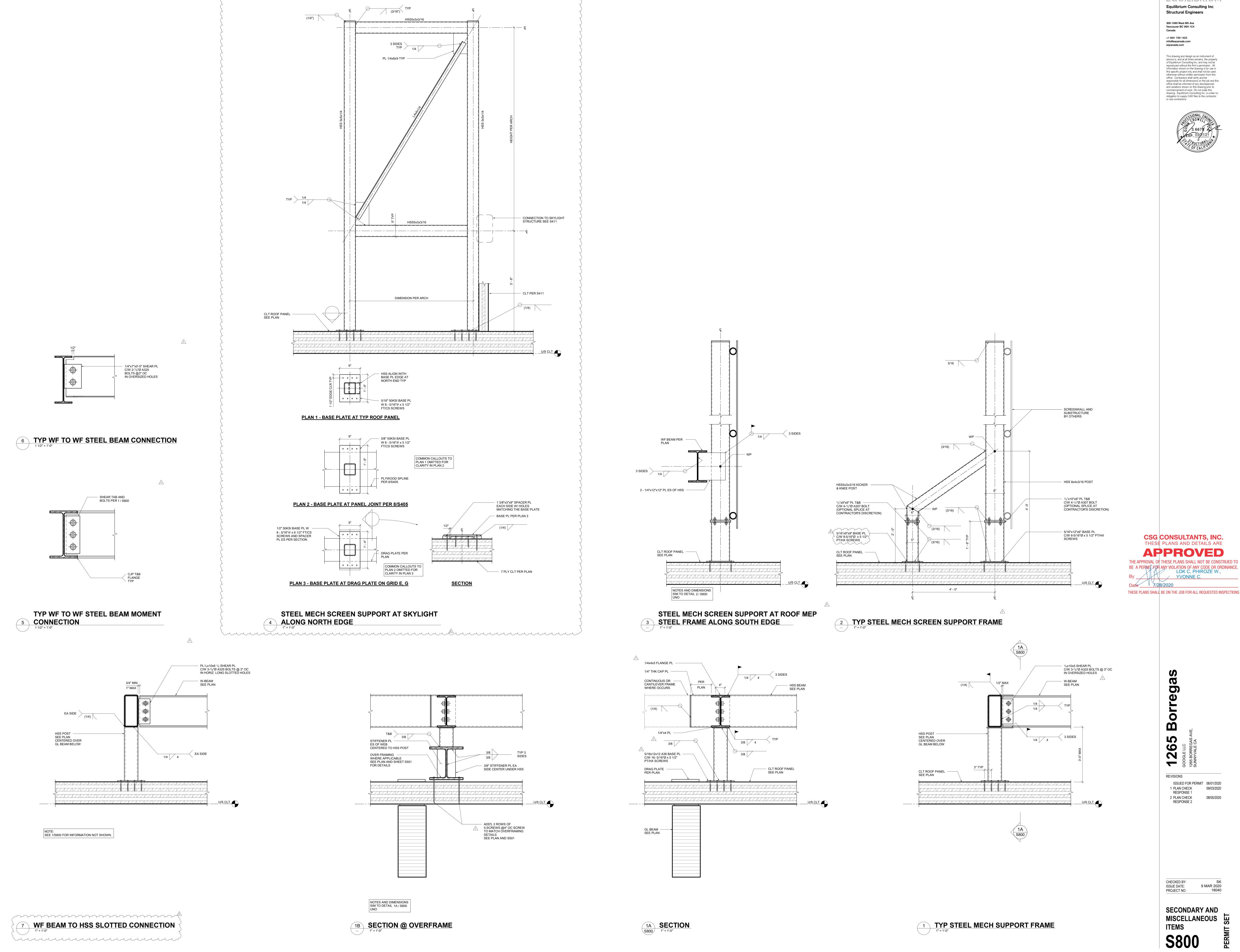






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26

REVISIONS

1 PLAN CHECK RESPONSE 1 2 PLAN CHECK RESPONSE 2

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