

2 STRUCTURAL STEEL

- A. GENERAL REQUIREMENTS
- ALL STEEL CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS LISTED IN THE IN THE LATEST EDITION OF "AMERICAN INSTITUTE OF STEEL CONSTRUCTION" (AISC) AISC-341 AND AISC-360.
  - ALL STEEL FABRICATION SHALL BE PERFORMED BY A LICENSED FABRICATOR.
  - ALL STRUCTURAL STEEL MATERIALS SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS:
    - (W) SHAPES AND (WT) SHAPES: = ASTM A892, FY = 50 KSI
    - (HP) SHAPES: = ASTM A572, FY = 50 KSI
    - (HSS) SHAPES – SQUARE/RECTANGLE: = ASTM A500 GRADE C, FY = 50 KSI
    - (HSS) SHAPES – ROUND: = ASTM A500 GRADE C, FY = 46 KSI
    - (S) AND (ST) SHAPES, (M) AND (MT) SHAPES = ASTM A36, FY = 36 KSI
    - (C) SHAPES AND (MC) SHAPES: = ASTM A36, FY = 36 KSI
    - (L) SHAPES AND (PL) SHAPES: = ASTM A36, FY = 36 KSI
    - (P) PIPE: = ASTM A53 (TYPE E OR S), GRADE B, FY = 35 KSI
    - HIGH STRENGTH BOLTS: = ASTM F3125, GRADE A325
    - ANCHOR RODS: = ASTM F1554, GRADE 36 TYPE 1
    - DEFORMED BAR ANCHORS (DBA): = ASTM A496
    - WELDED HEADED STUDS: = ASTM A108
    - MACHINE BOLTS: = ASTM A307, GRADE A
    - NUTS: = ASTM A563, GRADE C
    - WASHERS - FLAT OR BEVELED: = ASTM F436
  - ALL STEEL COLUMNS SHALL BE MILLED WITH EACH END TO FIT FLUSH WITH BASEPLATE, CAP OR END TO END.
  - PAINT ALL STRUCTURAL STEEL IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. DO NOT PAINT STEEL SURFACES TO BE ENCASED IN CONCRETE, SURFACES TO RECEIVE FIREPROOFING, CONNECTIONS DESIGNED AS FRICTION TYPE, SURFACES TO BE WELDED, OR SURFACES RECEIVING WELDED STUDS OR DBA'S IN THE FIELD.
  - ALL SHOP AND FIELD CONNECTIONS NOT SPECIFICALLY DETAILED ON THE CONSTRUCTION DOCUMENTS SHALL BE BOLTED OR WELDED. PROVIDE A MINIMUM (2) 1/2" DIAMETER BOLTS PER CONNECTION AND/OR MINIMUM WELD SIZE OF 3/16" FILLET ALL AROUND, U.N.O.
  - ALL STRUCTURAL STEEL EXPOSED TO WEATHER SHALL BE PRIME COATED AND PAINTED OR HOT DIPPED GALVANIZED PER ASTM-A123. USE ASTM A325 BOLTS IN HOT DIPPED GALVANIZED WITH GALVANIZED HARDENED WASHERS AND HEAVY HEX NUTS FOR BOLTING OF GALVANIZED ITEMS.
  - ALL TUBE AND PIPE SECTIONS EXPOSED TO WEATHER SHALL HAVE OPEN ENDS CAPPED WITH A 1/2" PLATE.
  - OVER SIZED OR SLOTTED HOLES SHALL NOT BE USED FOR ANY CONNECTIONS UNLESS SPECIFICALLY INDICATED ON THE CONSTRUCTION DOCUMENTS.
- B. EXECUTION REQUIREMENTS
- ALL HOLES AND CUTS SHALL BE SHOWN ON THE SHOP DRAWINGS AND MADE IN THE SHOP. FIELD BURNING IN STRUCTURAL STEEL MEMBERS IS NOT PERMITTED WITHOUT COORDINATION WITH EOR. DO NOT USE GAS CUTTING TORCHES TO CORRECT FABRICATION ERRORS IN STRUCTURAL STEEL FRAMING.
  - ALL BOLTS, ANCHOR BOLTS, ETC, SHALL BE INSTALLED WITH THE APPROPRIATE STEEL WASHERS AND TIGHTENED NUTS FOR THE SPECIFIED BOLTS.
  - ALL BEARING ELEVATIONS AND SLOPES FOR BEAMS, GIRDERS AND COLUMN HEIGHTS SHALL BE COORDINATED AND VERIFIED BY THE CONTRACTOR.
  - THE CONTRACTOR TO INSTALL ALL BEAMS AND GIRDERS TRUE, PLUMB AND SECURELY AT EACH END.
  - THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE STEEL FABRICATOR AND E.O.R. IMMEDIATELY OF ANY STRUCTURAL STEEL MEMBER DAMAGE OBSERVED. EACH DAMAGED AREA MUST BE REPAIRED OR REPLACED BY THE STEEL FABRICATOR AND SUBMITTED TO E.O.R. BEFORE FINAL INSPECTION.
  - ALL BOLTS SHALL BE TIGHTENED WITH A PRE-TENSIONED FORCE TO "SNUG-TIGHT" CONDITION AS DEFINED BY AISC, U.N.O.
  - ALL SLIP CRITICAL BOLTS (SC) SHALL BE USED WHERE DESIGNATED ON THE CONSTRUCTION DOCUMENTS. TIGHTEN SLIP CRITICAL BOLTS USING ONE OF THE FOLLOWING: TWIST-OFF BOLTS, TENSION CONTROL CALIBRATED WRENCH OR DIRECT TENSION INDICATORS.
  - ALL BOLTS SHALL BE INSTALLED AS BEARING-TYPE CONNECTIONS WITH THREADS EXCLUDED FROM THE SHEAR PLANE U.N.O.
  - ALL CONTACT SURFACES OF BOLTS PARTS SHALL BE DESCALED AND FREE OF DIRT, OIL, BURRS, PITS AND OTHER DEFECTS WHICH WOULD PREVENT SOLID SEATING OF PARTS.
  - NATURAL CAMBER IN BEAMS MUST BE INSTALLED CROWN UP.
- C. WELDING REQUIREMENTS
- ALL WELDING SHALL BE IN ACCORDANCE WITH THE "STRUCTURAL WELDING CODE", OF THE AMERICAN WELDING SOCIETY (AWS) AND ALL SHOP AND FIELD WELDING SHALL BE DONE BY CERTIFIED WELDERS QUALIFIED IN ACCORDANCE WITH AWS STANDARDS.
  - ALL WELDS ON MEMBERS COMPRISING THE LATERAL-RESISTING SYSTEM (MOMENT AND BRACE FRAMES) SHALL CONFORM TO THE DETAILING, MATERIALS, WORKMANSHIP, TESTING, AND INSPECTION REQUIREMENTS PER AWS D1.8 AND EMPLOY WELD FILLER METALS CLASSIFIED FOR NOMINAL 70 KSI TENSILE STRENGTH, REFERRED TO AS E70 ELECTRODES, MEETING THE FOLLOWING MINIMUM MECHANICAL PROPERTY REQUIREMENTS:
    - CVN TOUGHNESS OF 20 FT-LB AT -20°F, USING AWS A5 CLASSIFICATION TEST METHOD.
    - CVN TOUGHNESS OF 40 FT-LB AT 70°F, USING TEST PROCEDURES PRESCRIBED IN AWS D1.8 – APPENDIX A.
    - YIELD STRENGTH: 58 KSI MINIMUM, USING BOTH THE AWS AS CLASSIFICATION TEST (FOR E70 CLASSIFICATION ELECTRODES) AND THE TEST PROCEDURES PRESCRIBED IN AWS D1.8 – APPENDIX A.
    - TENSILE STRENGTH: 70 KSI MINIMUM, USING BOTH THE AWS AS CLASSIFICATION TEST (FOR E70 CLASSIFICATION ELECTRODES) AND THE TEST PROCEDURES PRESCRIBED IN AWS D1.8 – APPENDIX A.
    - ELONGATION: 22% MINIMUM, USING BOTH THE AWS AS CLASSIFICATION TEST AND THE TEST PROCEDURES PRESCRIBED IN AWS D1.8 – APPENDIX A.
  - ALL WELDING OF STRUCTURAL STEEL SHALL BE PERFORMED PER AWS A1.1 USING E70XX ELECTRODES U.N.O., BARE ELECTRODES AND GRANULAR FLUX SHALL CONFORM TO AWS.
  - ALL GROOVE OR BUTT WELDS SHALL BE COMPLETE PENETRATION WELDS. ALL EXPOSED BUTT WELDS SHALL BE GROUND SMOOTH.
  - ALL WELDING OF METAL DECK AND LIGHT GAGE STEEL SHALL BE IN ACCORDANCE WITH AWS D1.3.
  - ALL WELDING OF REINFORCING BARS SHALL BE PERFORMED PER AWS D1.4 USING E60XX ELECTRODES.
  - ALL EXPOSED WELDS ON ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) SHALL COMPLY WITH AISC CODE OF STANDARD PRACTICE.
  - ALL HSS TO HSS WELDS SHALL BE ACHIEVED BY ALL AROUND FILLET AND FLARE BEVEL WELDS TO PROVIDE 1/4" MINIMUM EFFECTIVE THROAT UNLESS A LARGER AMOUNT IS INDICATED OTHERWISE. PROVIDE ERECTION AIDS FOR FIELD ASSEMBLED HSS TO HSS CONNECTION AS REQUIRED. ERECTION AIDS SHALL BE REMOVED AND HSS SURFACES GROUND SMOOTH WHERE LOCATION IS TO BE EXPOSED IN FINAL CONSTRUCTION OR WHERE ERECTION AIDS WILL CONFLICT WITH OTHER CONSTRUCTION.
  - ALL WELD BACK UP BARS SHALL BE REMOVED AND GROUND SMOOTH AFTER WELD IS COMPLETED, U.N.O.
  - ALL WELD LENGTHS NOT NOTED SHALL BE FULL LENGTH. TERMINATE WELDS IN ACCORDANCE WITH AISC AND AWS.

- D. BASEPLATE AND ANCHORAGES REQUIREMENTS
- ALL GROUT UNDER STEEL BASEPLATES SHALL BE NON-SHRINK, CEMENT-BASED, NON-METALLIC GROUT OR DRYPACK GROUT WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 5,000 PSI. ALLOW GROUT TO FULLY CURE BEFORE APPLYING LOADS.
  - ALL ANCHOR RODS AT STEEL COLUMN BASEPLATES SHALL BE RODS WITH THREADS ON BOTH ENDS WITH HEAVY HEX NUT FULLY THREADED ONTO EMBEDDED END. TO PREVENT ANCHOR NUT FROM BACKING OFF, THE CONTRACTOR SHALL PERFORM ONE OF THE FOLLOWING:
    - TACK WELD NUT TO ROD.
    - SPOOL THREADS.
    - NYLOC NUTS.
    - APPROPRIATE CORROSION RESISTANT ADHESIVE.
  - ALL HEADED ANCHOR BOLTS WITH THE SAME PROPERTIES AND CAPACITIES MAY BE USED AS AN ALTERNATIVE TO ANCHOR RODS.
- E. SHOP DRAWING AND DIFFERED SUBMITTAL REQUIREMENTS
- ALL STEEL SHALL BE FABRICATED IN ACCORDANCE WITH AISC 303 AND SHALL BE COMPLETED BY AND APPROVED STEEL FABRICATOR.
  - SHOP DRAWINGS SHALL BE PREPARED IN ACCORDANCE WITH AISC 326. PROVIDE COMPLETE WELDING INFORMATION USING AWS SYMBOLS. USE PREQUALIFIED WELDED JOISTS PER AISC AND AWS D1.1 "STRUCTURAL WELDING CODE."
  - SUBMIT SHOP DRAWINGS SHOWING STEEL ELEVATIONS, PLAN AND SECTIONS, SIZES AND GRADE OF STEEL TO BE USED; PITCH, SPAN, CAMBER, SUPPORT CONFIGURATION AND SPACING FOR EACH TYPE OF BEAM, JOIST, GIRDER, COLUMN, ETC.; AND CONNECTION AND ANCHORAGE DETAILS.



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04/28/2025

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Delta	Revision	Date

Sheet Title:

GENERAL  
STRUCTURAL  
NOTES

Job No: 25-25952  
Dwg Date: 4-24-25  
Drawn By: TSR  
Checked By: DDH

S0.2

FOOD SERVICE DESIGN GROUP



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BOARD OF EDUCATION  
NATIONAL SCHOOL DISTRICT  
NATIONAL CITY, CALIFORNIA

PREPARED BY

SGPA ARCHITECTURE  
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FOOD SERVICE WALK-IN FREEZER DRAWING -  
SLAB DETAILS

CENTRAL WAREHOUSE  
FREEZER REPLACEMENT

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1400 N AVENUE  
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SUBMITTALS / REVISIONS		
#	ISSUE	DATE

**BID SET 5/1/2025  
NOT FOR  
CONSTRUCTION  
PROJECT STILL IN  
REVIEW**

PROJECT NO. 2239-E-02

SHEET NO.

K-3.8

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