

DESIGN CODES - ALL CODES LATEST EDITION UON:

IBC	INTERNATIONAL BUILDING CODE
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS - MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES
ACI	AMERICAN CONCRETE INSTITUTE
CRSI	CONCRETE REINFORCING STEEL INSTITUTE MANUAL OF STANDARD PRACTICE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE

NOTE: CODES ARE AMENDED AS REQUIRED BY THE STATE BUILDING CODE WITH JURISDICTION GOVERNING THE PROJECT LOCATION.

DESIGN LOADS:

ALLOWABLE SOIL BEARING PRESSURE	= 1,500 PSF (ASSUMED)
LATERAL EARTH PRESSURE (ACTIVE)	= 65 PSF
SURCHARGE LOAD	= 100 PSF

DESIGN:

ASSUMPTION SHALL BE VERIFIED BY A GEOTECHNICAL ENGINEER FOLLOWING ON-SITE OBSERVATIONS PRIOR TO PLACING FOOTING CONCRETE.

MATERIAL SPECIFICATIONS:

CONCRETE:

REINFORCING BARS	ASTM A615 GR 60, DEFORMED, FABRICATE TO CRSI STANDARDS
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CONCRETE (28 DAY COMPRESSIVE STRENGTH):

FOOTINGS/FOUNDATION WALLS	$f'_c = 4000$ PSI (use 6% (+/- 1.5%) ENTRAINED AIR IF EXTERIOR CONCRETE)
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GENERAL REQUIREMENTS:

- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PRIOR TO FABRICATING ANY STRUCTURAL MEMBER. FIELD MODIFICATIONS ARE NOT ALLOWED WITHOUT WRITTEN APPROVAL FROM ENGINEER OF RECORD.
- THE STRUCTURAL DESIGN IS BASED ONLY ON THE STRUCTURE IN ITS COMPLETED STATE. CONTRACTOR SHALL TAKE WHATEVER PRECAUTIONS ARE NECESSARY TO WITHSTAND ALL HORIZONTAL AND VERTICAL LOADINGS THAT MAY BE ENCOUNTERED DURING THE CONSTRUCTION PRIOR TO COMPLETION OF THE STRUCTURE.
- THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. PROVIDE CONSTRUCTION SHORING AND BRACING AS NECESSARY TO COMPLETE THE INSTALLATION OF ALL STRUCTURAL MEMBERS/FOOTINGS/ETC.
- NO OPENINGS OR SLEEVES (EXCEPT AS DETAILED) SHALL BE CUT OR PROVIDED IN FOOTINGS, WALLS OR STRUCTURAL FLOOR CONSTRUCTION WITHOUT APPROVAL.
- CONTRACTOR SHALL EMPLOY AND PAY FOR SERVICES OF AN INDEPENDENT TESTING AGENCY TO PERFORM SPECIFIED TESTING AND SPECIAL INSPECTION.
- CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY AND COORDINATE INDEPENDENT TESTING AGENCY AND INDEPENDENT SPECIAL INSPECTION AGENCY WORK DURING CONSTRUCTION. EMPLOYMENT OF AGENCY IN NO WAY RELIEVES CONTRACTOR OF OBLIGATION TO PERFORM WORK IN ACCORDANCE WITH REQUIREMENTS OF CONTRACT DOCUMENTS.
- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING DIMENSIONS, ELEVATIONS, AND CONDITIONS PRIOR TO BEGINNING WORK. REPORT ANY DISCREPANCIES TO A/E.
- TESTING AGENCIES SHALL PROMPTLY SUBMIT COPIES OF SPECIAL INSPECTION AND TESTING REPORT TO ENGINEER OF RECORD UON.
- ALL FOOTINGS SHALL REST ON UNDISTURBED SOIL OR APPROVED FILL COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DENSITY.

SPECIAL INSPECTION/TESTING:

- IN ADDITION TO INSPECTIONS REQUIRED BY SECTION 110, SPECIAL INSPECTION AND TESTING AGENCIES SHALL PERFORM WORK IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE 2018 EDITION GIVEN IN CHAPTER 17.
- TESTING FREQUENCY AND LOCATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIAL INSPECTIONS AND TESTING SCHEDULE INCLUDED WITH THE CONTRACT DOCUMENTS.
- CONTRACTOR SHALL PROVIDE SPECIAL INSPECTOR WITH SUFFICIENT NOTICE AND ACCESS TO ALL ITEMS REQUIRED FOR INSPECTION.
- THE SPECIAL INSPECTOR SHALL FURNISH REPORTS TO THE BUILDING OFFICIAL, ARCHITECT, AND ENGINEER OF RECORD STATING WEATHER THE WORK WAS IN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS. REPORTS SHALL INCLUDE THE FOLLOWING INFORMATION:
 - DATE REPORT IS ISSUED.
 - PROJECT TITLE AND NUMBER.
 - FIRM NAME AND ADDRESS
 - NAME AND SIGNATURE OF TESTER OR INSPECTOR
 - DATE AND TIME OF SAMPLING
 - DATE OF TEST OF SAMPLING
 - IDENTIFICATION OF PRODUCT AND SPECIFICATION SECTION
 - LOCATION IN PROJECT, INCLUDING ELEVATIONS, GRID LOCATION, AND DETAIL TYPE OF TEST OR INSPECTIONS.
 - RESULTS OF TESTS OR INSPECTIONS AND INTERPRETATIONS OF SAME.
 - OBSERVATIONS REGARDING COMPLIANCE WITH CONTRACTOR DOCUMENTS OR DEVIATIONS
- ANY DISCREPANCIES SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR FOR CORRECTION IS DISCREPANCIES ARE NOT CORRECTED, IT SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL OR ENGINEER OF RECORD TO PROVIDE REMEDIATION OR ACCEPTANCE PRIOR TO COMPLETION OF WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF RETESTING OR ADDITIONAL INSPECTION NEEDED AS RESULT OF UNINSPECTED WORK, FAILED TESTS, OR REJECTED WORK.
- FOR EPOXY AND EXPANSION ANCHORS: REVIEW INSTALLATION PROCEDURES PER SPECIFIED.

CAST-IN-PLACE CONCRETE:

- CONCRETE SHALL BE A RED-MIXED PRODUCT (PLANT MIXED) ACCORDING TO APPROVED CONCRETE MIX DESIGN SUBMITTALS. CONTRACTOR SHALL PROVIDE CONCRETE MIX DESIGN SUBMITTAL TO ENGINEER OF RECORD. CONCRETE PLACEMENT SHALL NOT COMMENCE WITHOUT APPROVED CONCRETE MIX DESIGN SUBMITTALS. CONCRETE SHALL NOT BE MIXED ON SITE EXCEPT FOR SMALL PATCHING. DO NOT ADD WATER TO RED-MIXED CONCRETE AT THE SITE EXCEPT TO REPLACE WATER LOST DURING TRANSPORTATION OF THE CONCRETE FROM THE RED-MIX PLANT TO THE SITE.
- CONCRETE MIX DESIGN SHALL BE PREPARED WITH ONE OF THE FOLLOWING TWO OPTIONS:
 - CONCRETE RED-MIX PLANT SHALL PROVIDE A HISTORY FOR EACH MIX DESIGN. THE HISTORY SHALL SHOW TESTED CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS FOR A MINIMUM OF 30 CONSECUTIVE TESTS OR TWO GROUPS OF CONSECUTIVE TESTS TOTALING AT LEAST 30 TESTS.
 - AN INDEPENDENT LABORATORY SHALL PREPARE EACH MIX DESIGN. THE MIX DESIGN SUBMITTAL SHALL BE SIGNED AND SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
- THE COST TO PREPARE THE MIX DESIGN SUBMITTAL AND ANY ASSOCIATED COSTS FOR TESTING TO PROVIDE A HISTORY SHALL BE PAID BY THE CONTRACTOR.
- CONCRETE CURING ACCELERATORS SUCH AS CALCIUM CHLORIDE ARE NOT ALLOWED WITHOUT WRITTEN APPROVAL FROM THE ENGINEER OF RECORD.
- FOOTING STEPS SHALL BE GENERALLY LOCATED WHERE INDICATED ON THE FOOTING AND FOUNDATION PLAN.
- PROVIDE A ROUGH SURFACE AT THE TOP OF ALL FOOTINGS.
- DOWEL VERTICAL WALL REINFORCING TO FOOTING OR THICKENED SLAB WITH BARS OF THE SAME SIZE AND SPACING AS THE VERTICAL WALL REINFORCING UNLESS OTHERWISE NOTED. PROVIDE A STANDARD HOOK AT THE BOTTOM OF THE DOWEL AND EMBED INTO THE FOOTING. PROVIDE A CLASS "B" LAP WITH THE WALL VERTICAL REINFORCING.

COLD WEATHER CONCRETE:

- CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO PROTECT EXISTING SOILS FROM FREEZING OR REMOVE THEM PRIOR TO CONSTRUCTION.
- CONCRETE SHALL NOT BE CAST AGAINST FROZEN SOILS. FROZEN SOILS SHALL BE REMOVED PRIOR TO CASTING FOOTINGS. REPLACE FROZEN SOILS WITH COMPACTED ENGINEER FILL.
- INSULATED PROTECTIVE BLANKETS OR OTHER SUPPLEMENTAL HEAT SHALL BE USED TO PROVIDE SUFFICIENT PROTECTION TO MAINTAIN DESIGNED CURING TEMPERATURES. CONCRETE THAT FREEZES OR CRACKS DUE TO FREEZING SHALL BE REPLACED BY THE CONTRACTOR WITH NO EXPENSE TO THE OWNER.
- PROVIDE A MINIMUM 6" THICK DRAINAGE COURSE BELOW ALL INTERIOR FLOOR SLABS ON GRADE UNLESS NOTED OTHERWISE ON PLANS OR SPECIFICATIONS (DRAINAGE COURSE SHALL BE ASTM C33 FINE AGGREGATE OR SIZE #8 COARSE AGGREGATE, BETWEEN DRAINAGE COURSE AND FINAL GRADE.
- CONCRETE FOOTINGS, WALLS, AND OTHER CONCRETE COMPONENTS SHALL BE PROTECTED FROM FREEZING FOR A MINIMUM OF 7 DAYS CURING TIME AS FOLLOWS:

REQUIRED CONCRETE TEMPERATURES		
AIR TEMPERATURE	SECTION SIZE, MINIMUM DIMENSION	
	< 12"	12"-36"
MINIMUM CONCRETE TEMPERATURE AS PLACED AND MAINTAINED		
	55° F	50° F
MINIMUM CONCRETE TEMPERATURE AS MIXED FOR INDICATED WEATHER		
ABOVE 30° F	60° F	55° F
0° F TO 30° F	65° F	60° F
BELOW 0° F	70° F	65° F

CONCRETE REINFORCING:

- ALL REINFORCING BAR LAPS SHALL BE CLASS "B", UNLESS NOTED OTHERWISE, PLUS 6" AT NON-CONTACT SPLICES. SEE MASONRY/CONCRETE NOTES FOR BAR LAP SPLICE LENGTHS.
- PROVIDE CONCRETE COVER AT REINFORCING PER THE FOLLOWING:

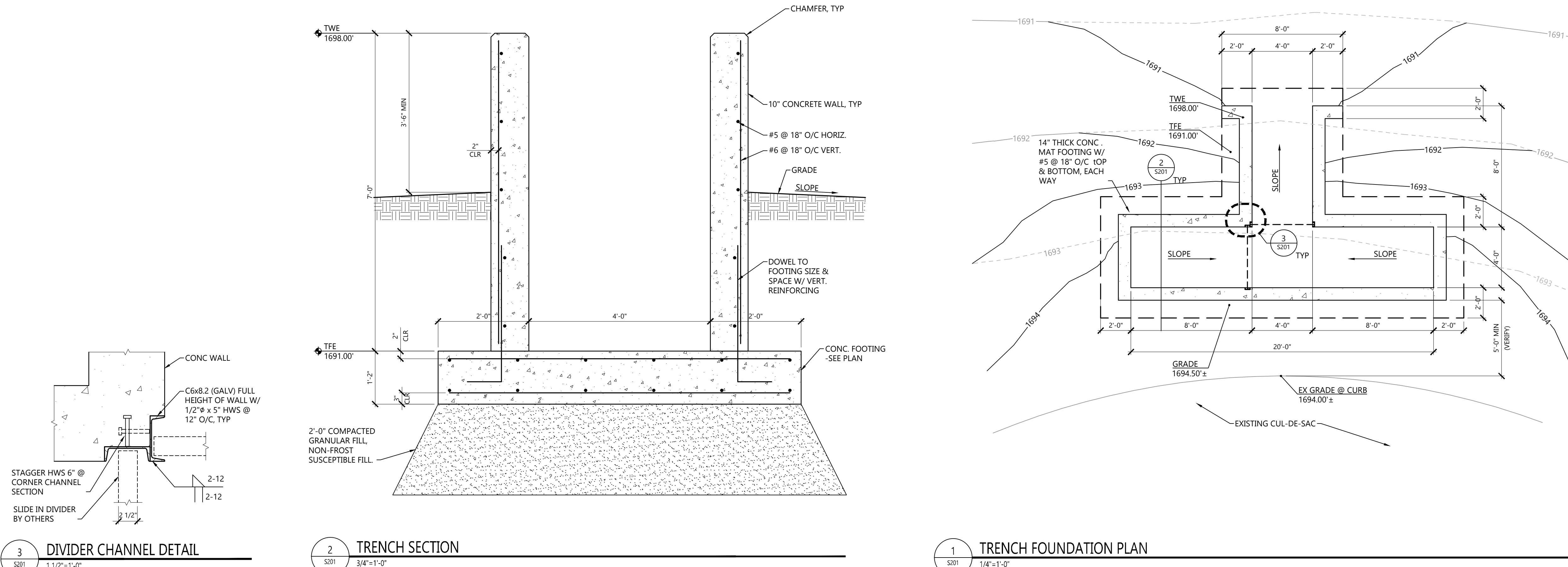
CONCRETE COVER AT STEEL REINFORCING	
REINFORCING LOCATION	MINIMUM COVER
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3"
CONCRETE EXPOSED TO EARTH OR WEATHER (#6 THROUGH #18 BAR)	2"
CONCRETE EXPOSED TO EARTH OR WEATHER (#5 BAR OR SMALLER)	0'-1 1/2"
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:	
SLABS, WALLS, OR JOISTS	
#14 AND #18 BARS	0'-1 1/2"
#11 BARS AND SMALLER	0'-0 3/4"
BEAMS, COLUMNS	
PRIMARY REINFORCEMENT, TIES, STIRRUPS, SPIRALS	0'-1 1/2"

- REINFORCING IN WALLS AND FOOTINGS TO BEND 2'-6" AROUND ALL CORNERS OR USE 5'-0" CORNER BARS
- CONTRACTOR SHALL SUBMIT STEEL REINFORCEMENT SHOP DRAWINGS INCLUDING BAR SCHEDULES, SHAPES OF BENT BARS, SPACING OF BARS AND LOCATION OF SPLICES TO ENGINEER OF RECORD.
- PLACEMENT OF STEEL REINFORCING SHALL BE IN ACCORDANCE WITH CRSI MANUAL OF STANDARD PRACTICE. POSITION, SUPPORT AND SECURE REINFORCEMENT AGAINST DISPLACEMENT. DO NOT DEVIATE FROM REQUIRED POSITION.
- REINFORCEMENT SHALL BE INSPECTED BY THE SPECIAL INSPECTION AGENCY ACCORDING TO THE SPECIAL INSPECTIONS AND TESTING SCHEDULE. CONTRACTOR SHALL NOTIFY SPECIAL INSPECTION AGENCY 24 HOURS PRIOR TO REQUESTED INSPECTION.
- DO NOT WELD REINFORCING UNLESS SPECIFICALLY SHOWN ON PLANS OR WITH WRITTEN PERMISSION FROM ENGINEER OF RECORD.

REQUIRED SPECIAL INSPECTION OF CONCRETE CONSTRUCTION 1,2

VERIFICATION & INSPECTION	CONTINUOUS	PERIODIC
1. INSPECTION OF REINFORCEMENT, INCLUDING PRESTRESSING TENDONS, AND VERIFY PLACEMENT	--	X
2. REINFORCING BAR WELDING:	--	--
A. VERIFY WELDABILITY OF REINFORCING BARS OTHER THAN ASTM A 706	--	X
B. INSPECT SINGLE-PASS FILET WELDS, MAXIMUM 5/16"; AND	--	X
C. INSPECT ALL OTHER WELDS	X	--
3. INSPECTION OF ANCHORS CAST INTO CONCRETE	--	X
4. INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS	--	X
A. ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARD INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS	X	--
B. MECHANICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED ABOVE	--	X
5. VERIFYING USE OF REQUIRED DESIGN MIX	--	X
6. PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE	X	--
7. INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	X	--
8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES	--	X
9. INSPECTION OF PRESTRESSED CONCRETE FOR:	--	--
A. APPLICATION OF PRESTRESSING FORCE; AND	N/A	--
B. GROUTING OF BONDED PRESTRESSING TENDONS	N/A	--
10. INSPECT ERECTION OF PRECAST CONCRETE MEMBERS	--	N/A
11. VERIFICATION IN-SITU CONCRETE STRENGTH, PRIOR TO STRESSING OF TENDONS IN POST-TENSIONED CONCRETE AND PRIOR TO REMOVAL OF SHORES AND FORMS FROM BEAMS AND STRUCTURAL SLABS	--	N/A
12. INSPECTION OF FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS PRIOR TO CONCRETE POUR	--	X

NOTE 1: ALL SPECIAL INSPECTION IN ACCORDANCE WITH CURRENT IBC AND ACI STANDARDS
NOTE 2: SEE GENERAL NOTES & SPECS FOR ADDITIONAL REQUIREMENTS



3 DIVIDER CHANNEL DETAIL
S201 1 1/2" x 1'-0"

2 TRENCH SECTION
S201 3/4" x 1'-0"

1 TRENCH FOUNDATION PLAN
S201 1/4" x 1'-0"



Architecture	Engineering	Industrial
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CLIENT

CITY OF MINOT

PROJECT DESCRIPTION

TRAINING TRENCH

CITY MINOT

STATE ND

ISSUE DATES

##	###	###
MARK	DESCRIPTION	DATE

PROJECT NO: 20205230

DRAWN BY: SJR

CHECKED BY: SJW

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DRAWING TITLE

STRUCTURAL PLAN NOTES & DETAILS

S201