DESIGN CRITERIA

1. CODE: INTERNATIONAL BUILDING CODE 2009 WITH WISCONSIN AMENDMENTS / ASCE 7-05
2. FLOOR LIVE LOADS: (REDUCED AS ALLOWED BY THE BUILDING CODE)
   OFFICES: = 50 PSF*
   PUBLIC AREAS: = 100 PSF
   STORAGE (LIGHT): = 125 PSF
   RETAIL AT FIRST FLOOR: = 100 PSF
   * INDICATES 15 PSF PARTITION LOAD IN ADDITION TO LOAD INDICATED

GENERAL REQUIREMENTS

1. CONTRACTOR AGREES THAT CONTRACTOR SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF THE WORK, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD OWNERAND STRUCTURAL ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED,IN CONNECTION WITH THE PERFORMANCE OF THE WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF OWNER OR STRUCTURAL ENGINEER.
2. THE CONTRACT DOCUMENTS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INCLUDE THE METHOD OF CONSTRUCTION. CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO: BRACING, SHORING FOR LOADS DUE TO CONSTRUCTION EQUIPMENT, TEMPORARY STRUCTURES, AND PARTIALLY COMPLETED WORK. OBSERVATION VISITS TO THE SITE BY STRUCTURAL ENGINEER SHALL NOT INCLUDE INSPECTION OF THE ABOVE ITEMS.
3. NTRIVE ENGINEERING SHALL NOT HAVE CONTROL OVER OR CHARGE OF AND SHALL NOT BE RESPONSIBLE IN ANY WAY FOR CONSTRUCTION MEANS, METHODS TECHNIQUES, SEQUENCES, OR PROCEDURES, OR FOR SAFETY OR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH ANY CONSTRUCTION ACTIVITIES, SINCE THESE ARE SOLELY THE CONTRACTOR'S RESPONSIBILITY UNDER THE CONTRACT
4. NTRIVE ENGINEERING SHALL NOT BE RESPONSIBLE FOR CONTRACTOR'S SCHEDULE OR FAILURES TO CARRY OUT ANY CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. NTRIVE ENGINEERING SHALL NOT HAVE CONTROL OVER OR CHARGE OF ACTIONS OF CONTRACTOR, SUB-CONTRACTOR, OR ANY OF THEIR AGENTS, OR EMPLOYEES, OR ANY OTHER PERSONS PERFORMING PORTIONS OF ANY CONSTRUCTION ACTIVITIES.
5. THE STRUCTURE IS STABLE ONLY IN ITS COMPLETED FORM. TEMPORARY SUPPORTS REQUIRED FOR STABILITY OF THE STRUCTURE DURING ALL INTERMEDIATE STAGES OF CONSTRUCTION SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR.
6. REFERENCE TO STANDARD SPECIFICATIONS OR CODES OF ANY TECHNICAL SOCIETY, ORGANIZATION, OR ASSOCIATION OR TO CODES OF LOCAL OR STATE AUTHORITIES, SHALL MEAN THE STANDARDS IN EFFECT AS OF THE DATE OF THE CONTRACT DOCUMENTS, UNLESS OTHERWISE NOTED.
7. CONTRACT DOCUMENTS SHALL GOVERN IN THE EVENT OF A CONFLICT WITH STANDARD SPECIFICATIONS OF ANY TECHNICAL SOCIETY, ORGANIZATION, OR ASSOCIATION.
8. NO PROVISION OF ANY REFERENCED STANDARD SPECIFICATION OR CODE, WHETHER OR NOT SPECIFICALLY INCORPORATED BY REFERENCE IN THE CONTRACT DOCUMENTS, SHALL BE EFFECTIVE TO CHANGE THE DUTIES AND RESPONSIBILITIES OF THE OWNER, ARCHITECT, STRUCTURAL ENGINEER, CONTRACTOR OR ANY OF THEIR CONSULTANTS, AGENTS, OR EMPLOYEES FROM THOSE SET FORTH IN THE CONTRACT DOCUMENTS, NOR SHALL IT BE EFFECTIVE TO ASSIGN TO STRUCTURAL ENGINEER OR ANY OF STRUCTURAL ENGINEER'S CONSULTANTS, AGENTS, OR EMPLOYEES ANY DUTY OR AUTHORITY TO SUPERVISE OR DIRECT THE FURNISHING OR PERFORMANCE IF THE WORK OR ANY DUTY OR AUTHORITY TO UNDERTAKE RESPONSIBILITIES CONTRARY TO THE PROVISIONS OF THE CONTRACT DOCUMENT.
9. ALL OMISSIONS AND CONFLICTS WITHIN THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT PRIOR TO PROCEEDING WITH THE WORK. WHEN THIS PROCEDURE IS NOT FOLLOWED, THE CONTRACTOR WILL BE RESPONSIBLE FOR CORRECTING IN-PLACE WORK WHEN THE ENGINEER DETERMINES THAT WORK TO BE INADEQUATE.
10. CONTRACTOR SHALL VERIFY DIMENSIONS AND CONDITIONS AT THE JOB SITE. ANY DISCREPANCIES BETWEEN THE CONDITIONS FOUND AND THOSE INDICATED IN THE CONTRACT DOCUMENTS SHALL BE BROUGHT TO THE ATTENTION OF ARCHITECT PRIOR TO PROCEEDING WITH THE WORK.
11. SEE DOCUMENTS FROM OTHER DISCIPLINES FOR FLOOR, WALL, AND ROOF OPENINGS, TRENCHES, PITS, PIPE SLEEVES, EQUIPMENT PADS, METAL PAN STAIRS, MISCELLANEOUS IRON, ETC.
12. DO NOT PLACE PIPES, DUCTS, CHASES, ETC. IN STRUCTURAL BEAM AND COLUMN MEMBERS. DO NOT CUT ANY STRUCTURAL MEMBER FOR PIPES, DUCTS, ETC., UNLESS NOTED OTHERWISE. NOTIFY STRUCTURAL ENGINEER WHEN DOCUMENTS BY OTHER DISCIPLINES SHOW OPENINGS, POCKETS, ETC. NOT INDICATED IN THE STRUCTURAL DRAWINGS BUT ARE LOCATED IN THE STRUCTURAL MEMBERS. CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM STRUCTURAL ENGINEER FOR INSTALLATION OF SUCH PIPES, DUCTS, CHASES, ETC.
13. DETAILS LABELED "TYPICAL" ON THE STRUCTURAL DRAWINGS APPLY TO ALL SITUATIONS OCCURRING ON PROJECT THAT ARE THE SAME OR SIMILAR TO THOSE LOCATIONS SPECIFICALLY INDICATED. WHERE A DETAIL IS NOT INDICATED, THE DETAIL SHALL BE THE SAME AS FOR OTHER SIMILAR CONDITIONS.

SUBMITTALS

1. SUBMITTALS PREPARED BY SUBCONTRACTORS SHALL BE REVIEWED BY CONTRACTOR PRIOR TO SUBMITTING TO ARCHITECT.
2. NTRIVE ENGINEERING ASSUMES NO RESPONSIBILITY FOR ANY MISUSE, MODIFICATION, OR MISREPRESENTATION OF ANY INFORMATION CONTAINED IN ANY ELECTRONIC MEDIA TRANSFERRED. NTRIVE ENGINEERING SHALL BE HELD HARMLESS FROM ANY AND ALL CLAIMS, SUITS, LIABILITY, DEMANDS, OR COSTS ARISING OUT OF, OR RESULTING FROM THE USE OF SAID DOCUMENT(S). UTILIZATION OF THE ELECTRONIC DOCUMENTS IS AT RECIPIENT'S OWN RISK.
3. ALL SUBMITTALS REVIEWED BY STRUCTURAL ENGINEER ARE REVIEWED FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT OF THE PROJECT AND GENERAL COMPLIANCE WITH THE INFORMATION INCLUDED IN THE CONTRACT DOCUMENTS. ANY ACTION INDICATED IS SUBJECT TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR CORRELATING PROCESSES AND TECHNIQUES OF CONSTRUCTION, AND COORDINATION OF THE WORK WITH THAT OF OTHER TRADES.
4. ALL SUBMITTALS SHALL BE REVIEWED BY THE ENGINEER FOR COMPLIANCE AND CONFORMANCE TO THE CONTRACT DOCUMENTS. SUBMITTALS SHALL BE REVIEWED AND RETURNED WITHIN THE FOLLOWING PERIOD AFTER BEING RECEIVED BY THE ENGINEER:
   REBAR 10 WORKING DAYS
   CONCRETE MIX DESIGNS 10 WORKING DAYS
5. CONTRACTOR DESIGNED ELEMENTS SHALL BE DESIGNED BY LICENSED PROFESSIONAL ENGINEERS REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS, DESIGN LOAD DATA, SUPPORT REACTIONS, AND CERTIFICATION THAT ELEMENTS WERE DESIGNED FOR LOADS SPECIFIED IN THE CONTRACT DOCUMENTS OR IN THE BUILDING CODE. ALL DOCUMENTS NOTED SHALL BE SEALED BY THE LICENSED ENGINEER. IF CRITERIA INDICATED ARE NOT SUFFICIENT, SUBMIT A WRITTEN REQUEST FOR ADDITIONAL INFORMATION TO THE ARCHITECT. THE FOLLOWING ELEMENTS AND THEIR CONNECTIONS SHALL BE CONTRACTOR DESIGNED:
   - STRUCTURAL STEEL CONNECTIONS NOT DETAILED OR SHOWN ON THE PEMB DRAWINGS.
   - STEEL STAIRS AND HANDRAILS
   - PREFABRICATED METAL BUILDINGS
   - STRUCTURAL LIGHT GAUGE FRAMING INCLUDING EXTERIOR WALLS

FOUNDATIONS

1. ALL FOUNDATIONS SHALL BE SUPPORTED ON APPROVED EXISTING SUBGRADE OR APPROVED COMPACTED STRUCTURAL FILL HAVING A MINIMUM ALLOWABLE BEARING CAPACITY OF 3000 PSF AS INDICATED IN THE GEOTECHNICAL ENGINEERING REPORT AS PREPARED BY GESTRA ENGINEERING, INC. DATED 04/14/2015.
2. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE VALIDITY OF THE SUBSURFACE CONDITIONS DESCRIBED IN THE DRAWINGS, SPECIFICATIONS, TEST BORINGS OR GEOTECHNICAL REPORTS. THIS DATA IS INCLUDED TO ASSIST THE CONTRACTOR DURING BIDDING AND SUBSEQUENT CONSTRUCTION, AND TO REPRESENT CONDITIONS ONLY AT SPECIFIC LOCATIONS AT THE PARTICULAR TIME THE OBSERVATIONS WERE MADE.
3. ALL EXTERIOR FOUNDATIONS SHALL BEAR ON APPROVED SUBGRADE AT MINIMUM DEPTH OF 4'-0" BELOW ADJACENT FINISH EXTERIOR GRADE.
4. FOOTING ELEVATIONS SHOWN ON THE DRAWINGS REPRESENT ESTIMATED DEPTHS AND ARE NOT TO BE CONSTRUED AS LIMITING THE AMOUNT OF EXCAVATION REQUIRED TO REACH SUITABLE BEARING MATERIAL.
5. THE CONTRACTOR SHALL PROVIDE TEMPORARY SUPPORTS IN ALL EXCAVATIONS AS REQUIRED TO PREVENT HORIZONTAL MOVEMENT OR VERTICAL SETTLEMENT OF SURROUNDING SOIL AND/OR PROPERTY WHICH WILL ENDANGER LIVES OR PROPERTY.
6. THE CONTRACTOR SHALL PROVIDE CONTROL OF SURFACE AND SUBSURFACE WATER PROMPTLY TO INSURE THAT ALL FOUNDATION WORK IS PERFORMED IN A DRY CONDITION.
7. FOUNDATIONS SHALL NOT BE PLACED ON FROZEN SUBGRADE.
8. THE CONTRACTOR SHALL PROTECT IN-PLACE FOUNDATIONS AND SLABS-ON-GRADE FROM FROST PENETRATION UNTIL THE PROJECT IS COMPLETE.
9. FOUNDATION WALLS SHALL BE BRACED DURING BACKFILLING AND COMPACTION OPERATIONS. BRACING SHALL BE LEFT IN PLACE UNTIL PERMANENT STRUCTURAL SUPPORT SYSTEM IS INSTALLED AND APPROVED BY THE ENGINEER.
10. WHERE FOUNDATION WALLS HAVE FILL ON BOTH SIDES, BACKFILLING SHALL BE DONE SIMULTANEOUSLY ON BOTH SIDES OF THE WALL.

PRE-ENGINEERED METAL BUILDING SYSTEM

1. PRE-ENGINEERED METAL BUILDING WORK SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING:
   A) AISC - "SPECIFICATION FOR DESIGN, FABRICATION AND ERECTION OF STEEL FOR BUILDINGS".
   B) AISC - "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".
   C) AWS D1.1 - "STRUCTURAL WELDING CODE -STEEL".
   D) AISC - "STRUCTURAL STEEL DETAILING MANUAL".
   E) MBMA - "METAL BUILDING SYSTEMS MANUAL".
   F) DESIGN LOADS AND CODE AS NOTED ON THEIR DRAWINGS.
2. THE PRE-ENGINEERED METAL BUILDING (PEMB) SHALL BE DESIGNED AND FABRICATED BY A MBMA MEMBER MANUFACTURER.
3. THE PEMB MANUFACTURER SHALL PROVIDE STAMPED DRAWINGS AND CALCULATIONS BY A REGISTERED PROFESSIONAL ENGINEER LICENSED IN THE JURISDICTION IN WHICH THE BUILDING IS LOCATED.
4. THE PEMB MANUFACTURER SHALL CONFORM TO THE FOLLOWING DEFLECTION CRITERIA:
   A) AISC - "DESIGN GUIDE #3 SERVICEABILITY DESIGN CONSIDERATIONS FOR STEEL BUILDING" UNLESS NOTED OTHERWISE ON THE DRAWINGS.
5. ANCHOR RODS SHALL BE PRESET WITH TEMPLATES.
6. LEVELING PLATES AND BEARING PLATES SHALL BE SET IN A FULL BED OF NON-SHRINK GROUT.
7. THE PEMB MANUFACTURER SHALL BE RESPONSIBLE FOR ALL CONNECTIONS, STIFFENERS ETC. REQUIRED TO SAFELY ERECT THE BUILDING. THE PEMB MANUFACTURER IS REPONSIBLE FOR ANY REQUIRED HOLES SHOWN PASSING THROUGH THE PEMB STEEL ON THE DRAWINGS.
8. THE PEMB MANUFACTURER SHALL PROVIDE FOUNDATION REACTIONS, COLUMN LOCATIONS AND BASE PLATE SIZES TO THE ENGINEER IN A TIMELY MANNER. CHANGES TO, OR OMMISSIONS OF REACTIONS, ETC, BY THE PEMB MANUFACTURER THAT REQUIRE REDESIGN OF THE FOUNDATIONS WILL REQUIRE ADDITIONAL ENGINEERING FEES.
9. ALL WELDS SHALL USE WELD METAL CONFORMING TO E70XX AND CONFORMING TO AWS WELDING PROCEDURES AND STANDARDS.
10. ALL WELDS SHALL BE MADE BY AWS CERTIFIED WELDERS CERTIFIED IN THE POSITION IN WHICH THE WELD IS TO BE MADE.
11. THE ERECTION OF ANY STRUCTURAL STEEL MEMBERS SHALL NOT COMMENCE UNTIL ALL SUPPORTING CONCRETE/MASONRY ELEMENTS HAVE ATTAINED AT LEAST 75% OF THEIR INTENDED MINIMUM COMPRESSIVE STRENGTH.
12. THE CONTRACTOR SHALL PROVIDE TEMPORARY ERECTION BRACING AND SUPPORTS AS REQUIRED FOR THE SAFE ERECTION OF ALL STEEL. TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL PERMANENT BRACING HAS BEEN INSTALLED AND FLOOR SLAB CONCRETE HAS ATTAINED 75% OF ITS REQUIRED STRENGTH.
13. STRUCTURAL STEEL SHALL BE TRUE AND PLUMB BEFORE FINAL BOLTING OR WELDING OF CONNECTIONS.
14. THE CONTRACTOR SHALL NOT MODIFY OR CUT ANY STRUCTURAL STEEL WITHOUT WRITEN APPROVAL FROM THE ENGINEER OF RECORD AND PEMB MANUFACTURER.
15. THE CONTRACTOR SHALL FIELD TOUCH UP ALL ABRASIONS, BURNS, AND SIMILAR DEFECTS IN PAINT OF STRUCTURAL STEEL.

CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING STANDARDS:
   A) ACI 301 – "SPECIFICATIONS FOR STRUCTURAL CONCRETE".
   B) ACI MCP – "MANUAL OF CONCRETE PRACTICE".
   C) ACI 318 – "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE".
   D) ACI 318.1 – "BUILDING CODE REQUIREMENTS FOR STRUCTURAL PLAIN CONCRETE".
2. CONCRETE SHALL HAVE A MINIMUM 28-DAY ULTIMATE COMPRESSIVE STRENGTH AS FOLLOWS:
   A) SLABS-ON-GRADE 4000 PSI
   B) FOOTINGS 3000 PSI
   C) PIERS & FROST WALLS 4000 PSI
3. ALL CONCRETE EXPOSED TO WEATHER TO BE AIR ENTRAINED WITH 5%- 8% AIR ENTRAINMENT.
4. ALL CONCRETE IS TO BE NORMAL WEIGHT CONCRETE UNLESS NOTED OTHERWISE.
5. ALL CONCRETE FLATWORK EXPOSED TO WEATHER TO BE FREE OF LIGNITE AND OTHER DELETERIOUS MATERIALS.
6. THE COARSE AGGREGATE SHALL BE WELL GRADED #57 STONE WITH A MAXIMUM AGGREGATE SIZE OF 3/4". AGGREGATE FOR SLAB ON GRADE MAY HAVE A MAXIMUM AGGREGATE SIZE OF 1".
7. THE SLUMP OF THE CONCRETE SHALL BE 4". IF A HIGH RANGE WATER REDUCER IS USED THEN THE SLUMP PRIOR TO THE ADDITION OF THE WATER REDUCER SHALL BE 4". THE SLUMP SHALL NOT EXCEED 10" AFTER THE ADDITION OF A HIGH RANGE WATER REDUCER.
8. MINIMUM CEMENTITIOUS REQUIREMENTS:
   A) 3000 PSI CONCRETE: 517 LBS/CU. YD.
   B) 4000 PSI CONCRETE: 564 LBS/CU. YD.
9. MAXIMUM FLYASH CONTENT: 15%
10. MAXIMUM WATER-CEMENT RATIO:
    A) AIR ENTRAINED CONCRETE: 0.45
    B) NON-AIR ENTRAINED CONCRETE: 0.50
11. CONCRETE DESIGN SUBMITTALS SHALL INCLUDE A HISTORY OF BREAKS ACCORDING TO ACI 318.
12. PROTECTION FOR REINFORCING BARS:
    UNFORMED SURFACES IN CONTACT WITH SOIL 3"
    FORMED SURFACES EXPOSED TO SOIL OR WEATHER
    #6 BARS AND LARGER 2"
    #5 BARS AND SMALLER 1 1/2"
    FORMED SURFACES NOT EXPOSED TO SOIL OR WEATHER
    PIERS 1 1/2"
    SLABS
    #11 BARS AND SMALLER 3/4"
13. CONSTRUCTION JOINTS IN WALLS TO BE KEYED AND PLACED AT APPROVED LOCATIONS.
14. ALL COLUMN POCKETS TO BE FILLED WITH CONCRETE AFTER COLUMN IS ERECTED.
15. SLEEVES AND OPENINGS IN BEAMS, JOISTS AND SLABS NOT SHOWN ON STRUCTURAL DRAWINGS ARE NOT PERMITTED, UNLESS APPROVED BY THE ENGINEER.
16. WATERSTOPS
    A) SEE ARCHITECTS DRAWINGS FOR WATERSTOPS.
    B) WATERSTOPS TO BE EXPANDING CLAY (BENTONITE OR EQUAL) UNLESS NOTED OTHERWISE.
    C) PROVIDE WATERSTOPS IN ALL BELOW GRADE FOUNDATION WALL CONSTRUCTION JOINTS.

CONCRETE JOINTS

1. MAXIMUM SPACING OF CONSTRUCTION AND/OR CONTROL JOINTS IN SLAB-ON-GRADE CONSTRUCTION SHALL BE 18'-0" O.C. MAX. JOINTS SHALL BE PLACED TO PRODUCE PANELS THAT ARE AS SQUARE AS POSSIBLE AND NEVER EXCEEDING A LENGTH TO WIDTH RATIO OF 1.5 TO 1.
2. CONSTRUCTION AND/OR CONTROL JOINTS FOR SLAB-ON-GRADE CONSTRUCTION SHALL BE LOCATED ON COLUMN LINES.
3. CONSTRUCTION OR CONTRACTION JOINTS IN CONCRETE FOUNDATION WALLS SHALL BE SPACED AT 20'-0" ON CENTER MAXIMUM.

REINFORCING FOR CONCRETE

1. ALL REINFORCING STEEL SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING:
   A) ACI 315 - "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT"
   B) ACI 318 – "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE".
   C) MSP2 – "CRSI MANUAL OF STANDARD PRACTICE".
   D) AWS D1.4 – "STRUCTURAL WELDING CODE – REINFORCING STEEL".
   E) WRI – "WELDED WIRE FABRIC MANUAL OF STANDARD PRACTICE".
2. STEEL REINFORCING BARS SHALL CONFORM TO ASTM 615 (GRADE 60), 60 KSI YIELD POINT DEFORMED BARS IN ACCORDANCE WITH LATEST ASTM SPECIFICATIONS UNLESS NOTED OTHERWISE.
3. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.
4. ALL REINFORCING BARS TO BE DETAILED AND PLACED IN ACCORDANCE WITH THE ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES" SPECIFICATIONS. CONTINUOUS BARS TO BE LAPPED.
5. ONLY REBAR CONFORMING TO ASTM A706 REBAR MAY BE WELDED.
6. PROVIDE (2) #5 DIAGONALS FOR EACH LAYER AT EACH CORNER OF OPENINGS.
7. PROVIDE CORNER BARS IN THE OUTSIDE FACE AND AT WALL JUNCTURES MATCHING HORIZONTAL WALL BARS. USE (3) #5 VERTICAL CONSTRUCTION RODS AT CORNERS.
8. LAP SPLICES SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLE UNLESS NOTED OTHERWISE.
9. WELDED WIRE FABRIC SHALL LAP A MINIMUM OF 6" AND BE TIED TOGETHER.

SPECIAL INSPECTIONS

1. SPECIAL INSPECTIONS SHALL BE IN ACCORDANCE WITH CHAPTER 17 OF THE BUILDING CODE AND CHAPTER N OF AISC 360-10. (SEE INCLUDED TABLES AND NOTE 4. FOR SPECIAL INSPECTION REQUIREMENTS)
2. SPECIAL INSPECTION REPORTS SHALL BE FURNISHED TO BUILDING OFFICIAL, OWNER, ARCHITECT, STRUCTURAL ENGINEER, AND CONTRACTOR. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR, AND IF NOT CORRECTED, SHALL BE REPORTED TO BUILDING OFFICIAL, OWNER, ARCHITECT, AND STRUCTURAL ENGINEER.
3. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL REPORT STATING THAT THE STRUCTURAL WORK WAS, TO THE BEST OF THE SPECIAL INSPECTOR'S KNOWLEDGE, PERFORMED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
4. THE FOLLOWING TYPES OF WORK REQUIRE SPECIAL INSPECTIONS: (REFER TO THE BUILDING CODE AND SPECIFICATIONS FOR DETAILED INSPECTION REQUIREMENTS.)
   - CONCRETE CONSTRUCTION
   - SOILS
5. NTRIVE IS NOT RESPONSIBLE FOR PERFORMING SAID SPECIAL INSPECTIONS.

Xcel Sports Complex

Pitzner Parkway
SE 1/4 OF S3 T.6N. R.14E.
CITY OF JEFFERSON, WI

2 Site Locator Map
1" = 400'-0"

SHEET INDEX

S-100 - GENERAL NOTES
S-101 - SCHEDULES, BASE PLATE AND PIER DETAILS
S-200 - FOUNDATION PLAN
S-201 - FOUNDATION PLAN CONT.
S-300 - FOUNDATION DETAILS

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No.	Description	Date
1	ISSUED FOR PERMIT	07/08/2015

Xcel
Sports Complex

GENERAL NOTES

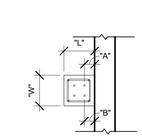
STEVEN UECKE 41886-6 CHICAGO IL. WISCONSIN PROFESSIONAL ENGINEER

Date 07/08/2015

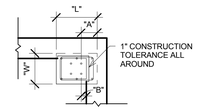
S-100

Scale

7/8/2015 11:43:55 AM



1 P1
1/2" = 1'-0"



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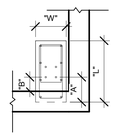

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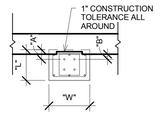

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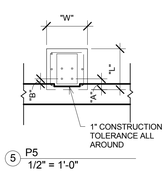

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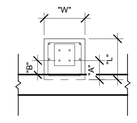

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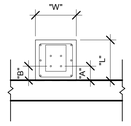

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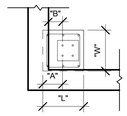

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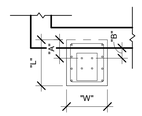

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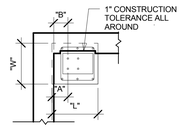

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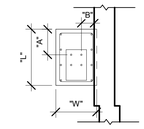
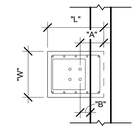
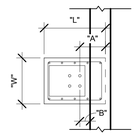


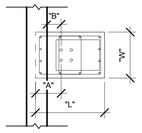
11 P7
1/2" = 1'-0"



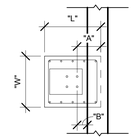
12 P8
1/2" = 1'-0"



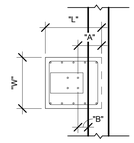
13 P9
1/2" = 1'-0"



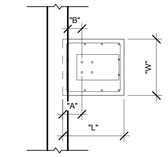
14 P10
1/2" = 1'-0"



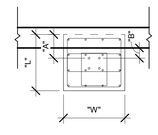
15 P11
1/2" = 1'-0"



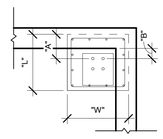
16 P11A
1/2" = 1'-0"



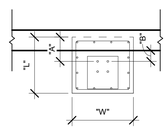
17 P12
1/2" = 1'-0"



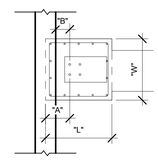
18 P13
1/2" = 1'-0"



19 P13A
1/2" = 1'-0"



20 P13B
1/2" = 1'-0"



21 P14
1/2" = 1'-0"

PIER SCHEDULE									
MARK	PIER SIZE "W"x"L"	VERTICAL REINF	REINF DETAIL	PIER TIES	ELEV OF TOP OF PIER	ANCHOR BOLT	DIM "A"	DIM "B"	REMARKS
P1	12"x12"	(4) #6	1/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 5/8" Ø x 7-1/2" EMBED	4"	4"	-
P2	12"x16"	(6) #6	2/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 5/8" Ø x 7-1/2" EMBED	6-1/4"	2"	-
P3	12"x24"	(8) #6	3/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 5/8" Ø x 7-1/2" EMBED	9-3/4"	5-1/2"	-
P4	16"x12"	(6) #6	4/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 5/8" Ø x 7-1/2" EMBED	3-3/4"	2"	-
P5	16"x16"	(6) #6	5/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 5/8" Ø x 7-1/2" EMBED	7-3/4"	2"	-
P5A	16"x16"	(6) #6	6/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 5/8" Ø x 7-1/2" EMBED	7-1/2"	5-1/2"	-
P5B	16"x16"	(6) #6	7/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 5/8" Ø x 7-1/2" EMBED	5-3/4"	5-1/2"	-
P5C	16"x16"	(6) #6	8/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 5/8" Ø x 7-1/2" EMBED	7-3/4"	5-1/2"	-
P6	16"x18"	(8) #6	9/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 5/8" Ø x 7-1/2" EMBED	7-1/4"	4"	-
P6A	16"x18"	(8) #6	10/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 5/8" Ø x 7-1/2" EMBED	4-1/4"	5-1/2"	-
P7	16"x22"	(8) #6	11/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 5/8" Ø x 7-1/2" EMBED	10"	5"	-
P8	18"x22"	(10) #6	12/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 1" Ø x 12" EMBED	9-1/4"	4"	-
P9	18"x24"	(10) #6	13/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 1" Ø x 12" EMBED	10"	4"	-
P10	18"x27"	(12) #6	14/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 1" Ø x 12" EMBED	10"	5-1/2"	-
P11	20"x22"	(10) #6	15/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 3/4" Ø x 9" EMBED	9-1/4"	4"	-
P11A	20"x22"	(10) #6	16/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 5/8" Ø x 7-1/2" EMBED	9-1/4"	4"	-
P12	22"x24"	(12) #6	17/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 3/4" Ø x 9" EMBED	7-1/2"	5-1/2"	-
P13	24"x22"	(16) #6	18/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 3/4" Ø x 9" EMBED	9-1/4"	4"	-
P13A	24"x22"	(12) #6	19/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 1" Ø x 12" EMBED	9-1/2"	4"	-
P13B	24"x22"	(12) #6	20/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 3/4" Ø x 9" EMBED	9-1/4"	4-1/4"	-
P14	24"x26"	(14) #6	21/S-101	(3) #3 @ 2" REST #3 @12"	99'-0"	(4) 3/4" Ø x 9" EMBED	9-1/2"	5-1/2"	-

FOOTING SCHEDULE				fs = 3000 psf f'c = 3000 psi	
	SIZE			REINFORCING	
MARK	L	S	D	LONG BARS	SHORT BARS
F5	5'-0"	5'-0"	1'-6"	6 #4	6 #4
F7	7'-0"	7'-0"	2'-0"	8 #5	8 #5
F8	8'-0"	8'-0"	1'-6"	9 #6	9 #6
F10	10'-0"	10'-0"	2'-0"	11 #5	11 #5
F11	11'-6"	11'-6"	2'-0"	13 #5	13 #5

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Mike Pelikan
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262-593-2290

No.	Description	Date
1	ISSUED FOR PERMIT	07/08/2015

Xcel
Sports Complex

SCHEDULES, BASE PLATE AND PIER DETAILS

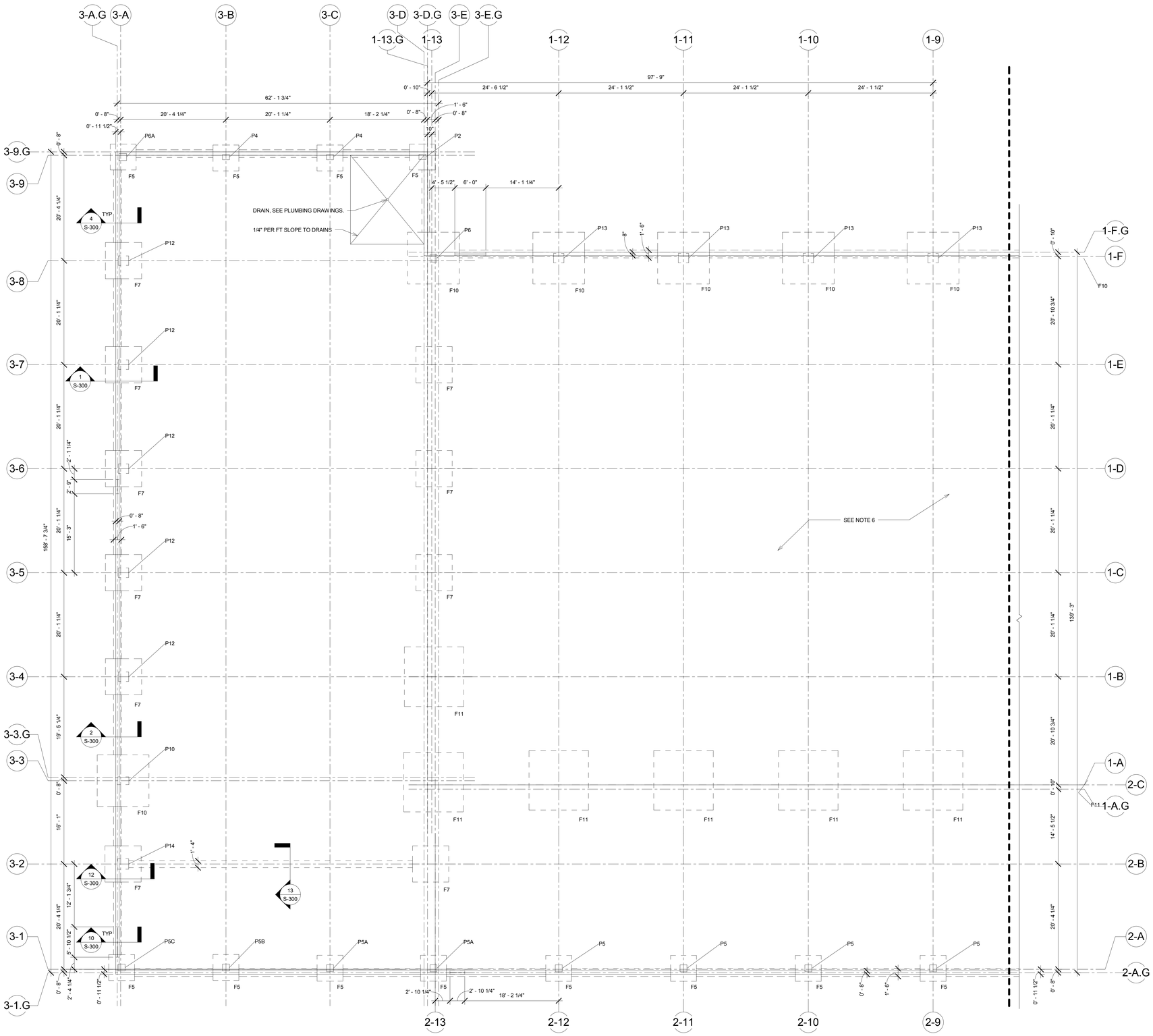
WISCONSIN
STEVEN UECKE 41886-6 CHICAGO IL
PROFESSIONAL ENGINEER

Date 07/08/2015

S-101

Scale As indicated

7/8/2015 11:43:58 AM



1 FOUNDATION PLAN
1/8" = 1'-0"

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Steven Uecke
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630-480-4120x101

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No.	Description	Date
1	ISSUED FOR PERMIT	07/08/2015

Xcel
Sports Complex

FOUNDATION PLAN

SHEET NOTES:

1. SEE SHEET S-100 FOR GENERAL NOTES, ABBREVIATIONS AND SCHEDULES.
2. VERIFY ALL DIMENSIONS AND ELEVATIONS WITH EXISTING CONDITIONS, ARCHITECTURAL, PLUMBING AND MECHANICAL DRAWINGS.
3. FX INDICATES FOOTING. SEE FOOTING SCHEDULE ON SHEET S-100. PX INDICATES CONCRETE PIER. SEE PIER SCHEDULE ON SHEET S-100.
4. T/FOUNDATION WALL ELEVATION = +100'-0" UNLESS NOTED THUS [ ] T/EXTERIOR FOOTING ELEVATION = +96'-6" UNLESS NOTED THUS ( ). T/INTERIOR FOOTING ELEVATION = +99'-0" UNLESS NOTED THUS ( ).
5. TYPICAL SLAB ON GRADE - 6" CONCRETE WITH 6X6 - W2.9XW2.9 WWR ON MIN 10 MIL POLYETHYLENE VAPOR RETARDER ON 6" MIN WELL COMPACTED GRANULAR FILL (PER GEOTECHNICAL REPORT. MAXIMUM PARTICLE SIZE OF 1" CONTAINING NO MORE THAN 5% PASSING 200 SIEVE AND FOLLOW RECOMMENDATIONS OF ACI 302.1 PART 4.1).
6. T/CONC ELEV=+100'-0".

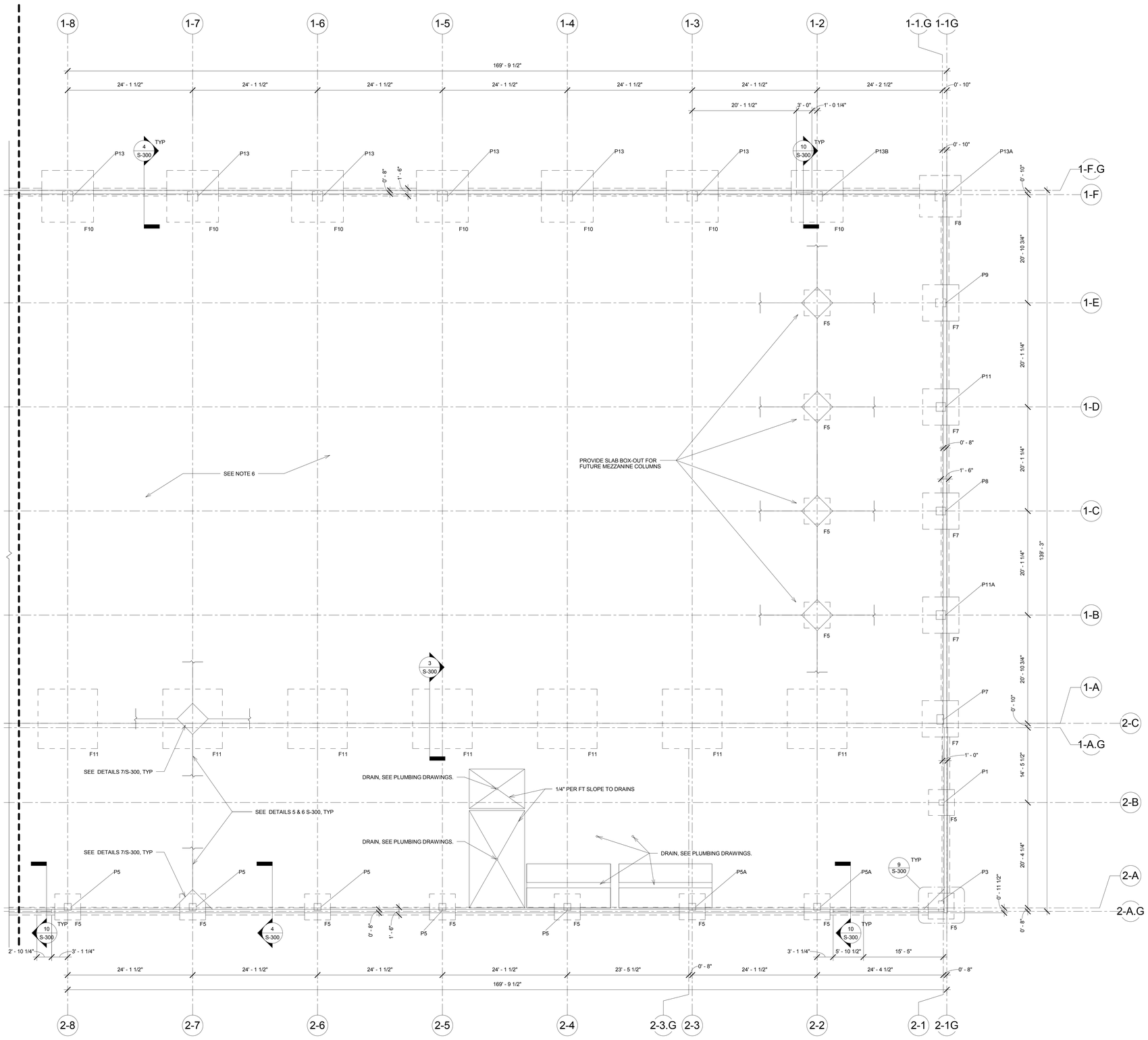
WISCONSIN
STEVEN UECKE 41886-6 CHICAGO IL
PROFESSIONAL ENGINEER

Date 07/08/2015

S-200

Scale 1/8" = 1'-0"

7/8/2015 11:43:59 AM



1 FOUNDATION PLAN CONT.
1/8" = 1'-0"

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No.	Description	Date
1	ISSUED FOR PERMIT	07/08/2015

Xcel
Sports Complex

SHEET NOTES:

1. SEE SHEET S-100 FOR GENERAL NOTES, ABBREVIATIONS AND SCHEDULES.
2. VERIFY ALL DIMENSIONS AND ELEVATIONS WITH EXISTING CONDITIONS, ARCHITECTURAL, PLUMBING AND MECHANICAL DRAWINGS.
3. FX INDICATES FOOTING. SEE FOOTING SCHEDULE ON SHEET S-100. PX INDICATES CONCRETE PIER. SEE PIER SCHEDULE ON SHEET S-100.
4. T/FOUNDATION WALL ELEVATION = +100'-0" UNLESS NOTED THUS [ ]
5. T/EXTERIOR FOOTING ELEVATION = +96'-6" UNLESS NOTED THUS ( ). T/INTERIOR FOOTING ELEVATION = +99'-0" UNLESS NOTED THUS ( ).
6. TYPICAL SLAB ON GRADE - 6" CONCRETE WITH 6X6 - W2.9XW2.9 WWR ON MIN 10 MIL POLYETHYLENE VAPOR RETARDER ON 6" MIN WELL COMPACTED GRANULAR FILL (PER GEOTECHNICAL REPORT. MAXIMUM PARTICLE SIZE OF 1" CONTAINING NO MORE THAN 5% PASSING 200 SIEVE AND FOLLOW RECOMMENDATIONS OF ACI 302.1 PART 4.1).
   T/CONC ELEV=+100'-0".

FOUNDATION PLAN CONT.

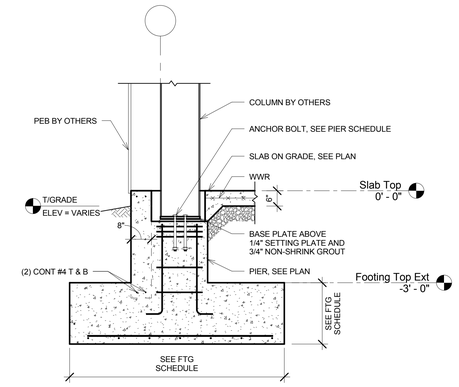
WISCONSIN
STEVEN UECKE #1886-6 CHICAGO IL.
PROFESSIONAL ENGINEER

Date 07/08/2015

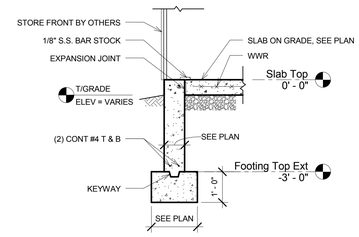
S-201

Scale 1/8" = 1'-0"

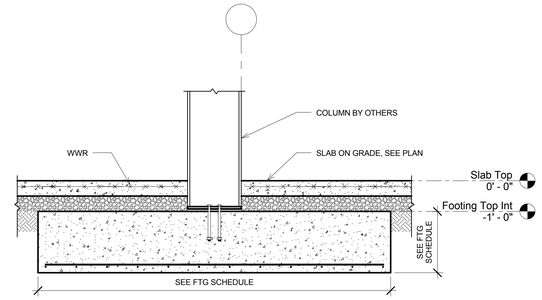
7/8/2015 11:43:59 AM



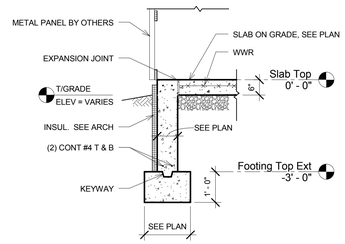
1 TYPICAL SECTION AT COL AT EXT WALL
1/2" = 1'-0"



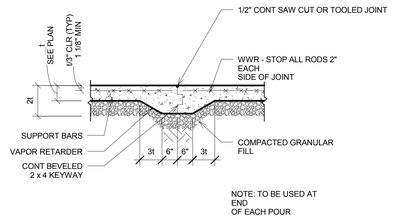
2 TYP FDN SECTION AT STORE FRONT
1/2" = 1'-0"



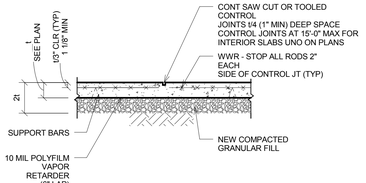
3 TYP SECTION AT INTERIOR COL
1/2" = 1'-0"



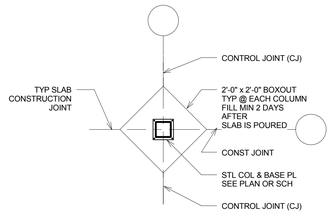
4 TYP SECTION AT FOUNDATION
1/2" = 1'-0"



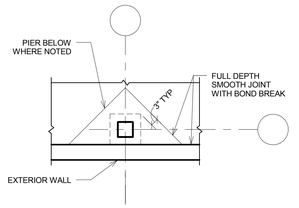
5 TYP SLAB CONSTRUCTION JOINT
1/2" = 1'-0"



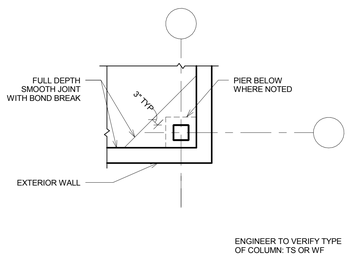
6 TYP CONTROL JOINT
1/2" = 1'-0"



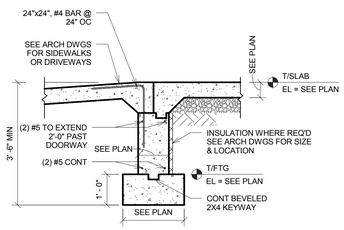
7 TYP BOX-OUT CENTER
1/2" = 1'-0"



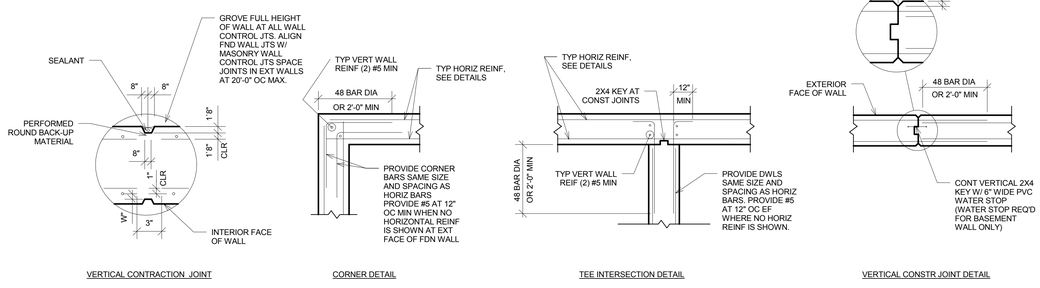
8 TYP BOX-OUT EDGE
1/2" = 1'-0"



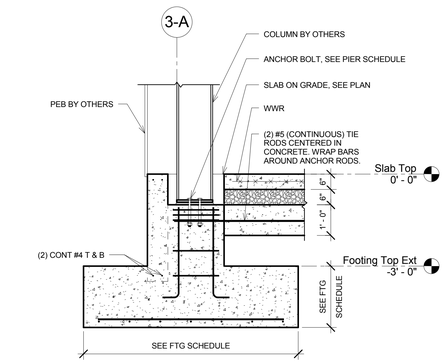
9 TYP BOX-OUT CORNER
1/2" = 1'-0"



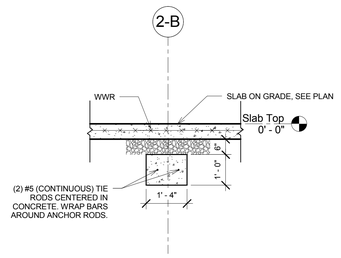
10 TYP DOOR SECTION AT FOUNDATION
1/2" = 1'-0"



11 TYP CONCRETE WALL DETAILS
3/4" = 1'-0"



12 TYP COLUMN TIE DETAIL
1/2" = 1'-0"



13 TYP COLUMN TIE SECTION
1/2" = 1'-0"

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No.	Description	Date
1	ISSUED FOR PERMIT	07/08/2015

Xcel Sports Complex

FOUNDATION DETAILS

STEVEN UECKE 41886-6 CHICAGO IL. WISCONSIN PROFESSIONAL ENGINEER

Date 07/08/2015

S-300

Scale As indicated

7/8/2015 11:44:00 AM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Cast-in-place concrete.
2. Concrete accessories.
3. Formwork, shoring, bracing, and anchorage.
4. Concrete reinforcement.
5. Underslab vapor retarder.
6. Concrete Sealer.

B. Related Sections:
1. 003152 - Testing and Inspection Services: Owner paid testing and inspections.
2. 079200 - Joint Sealants: Expansion joint fillers.
3. 312000 - Earth Moving: Fill under slabs on grade.

C. Drawings, the provisions of the Agreement, the General Conditions, and Division 1 specification sections apply to all work of this Section.

D. Substitutions: Substitute products will be considered only under the terms and conditions of Section 016000.

1.2 REFERENCES

A. American Concrete Institute (ACI):
1. 117 - Standard Specification for Tolerances for Concrete Construction and Materials.
2. 301-05 - Specifications for Structural Concrete.
3. 315 - Details and Detailing of Concrete Reinforcement.

B. American Society for Testing and Materials (ASTM):
1. A615 - Deformed and Plain Billet-Steel for Concrete Reinforcement.
2. C33 - Specifications for Concrete Aggregates.
3. C94 - Specifications for Ready Mixed Concrete.
4. C132 - Test for Slump of Portland Cement Concrete.
5. C150 - Specification for Portland Cement.
6. C156 - Test Method for Water Retention by Concrete Curing Materials.
7. C171 - Specification for Sheet Materials for Curing Concrete.
8. C260 - Specifications for Air-Entraining Admixtures for Concrete.
9. C309 - Specification for Liquid Membrane Forming Compounds for Curing Compounds.
10. C494 - Specifications for Chemical Admixtures for Concrete.
11. C618 - Specification for Fly Ash and Raw or Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
12. C939 - Test Method for Flow of Grout for Preplaced-Aggregate Concrete
13. C1107 - Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink)
14. C1315 - Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
15. D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction.
16. E1155 - Standard Test Method for Determining Floor Flatness and Levelness Using the "F Number" System.

1.3 SUBMITTALS

A. Make submittals in accordance with Section 013300.

B. Product Data: Submit data for each accessory, admixture, and curing material proposed for the work.

C. Shop Drawings:
   1. Reinforcing:
      a. Detail reinforcing in accordance with ACI 315. Indicate reinforcement sizes, spacings, locations and quantities of reinforcing, bending and cutting schedules, splicing, and supporting and spacing devices.
      b. Indicate embedded items.
   2. Slab Layouts: Dimension locations of control, expansion, and construction joints. Relate to building grid lines.

D. Quality Control Submittals:
   1. Mix Designs: Prior to concrete work, submit mix designs for approval.
   2. Test Results: Submit test results per ASTM C311 performed less than 6 months prior to use for approval by Architect.
   3. Certifications: Submit mill certificates for cement, aggregates, and reinforcing.

1.4 QUALITY ASSURANCE

A. Perform work in accordance with ACI 301.

B. Concrete work is subject to special testing and inspection as specified in 014500. Notify Architect at least 48 hours before concrete is poured.

C. Pre-Installation Conference:
   1. At least 35 days prior to start of concrete work the Contractor shall hold, in accordance with Section 013119, a meeting to review the detailed requirements of the concrete design mixes and to determine the procedures for producing proper concrete construction.
   2. Required in attendance:
      a. Contractor's superintendent.
      b. Testing Laboratory representative.
      c. Concrete subcontractor.
      d. Ready-mix producer.
      e. Admixtures manufacturer's representative.
      f. Architect/Engineer
      g. All subcontractors with work to be installed in, or affected by concrete work.
   3. Notify Architect 10 days prior to the scheduled date of the meeting.
   4. Agenda: Include the following.
      a. Installation scheduling and coordination; scheduling of mock-up construction and review.
      b. Classes of concrete required; mix designs; applicable references.
      c. Formwork.
      d. Reinforcement and placement.
      e. Climatic conditions; hot and/or cold weather concreting procedures (as appropriate); unusual placing conditions.
      f. Substrate preparation; placement methods; construction joints.
      g. Flatwork; flatness and levelness requirements; finishing; criteria for acceptance; remedies.
      h. Curing and protection procedures
      i. Site quality control; inspection and testing requirements.
      j. Sealers; locations and coverage rates

PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. Unless specified otherwise, conform to ACI 301.

B. Plywood:
   1. APA rated High Density Overlay or Medium Density Overlay, Plyform Class 1. EXT.

C. Form Ties: Snap-off metal; metal washer ends.

2.2 REINFORCING

A. Reinforcing Steel: Types as indicated on the structural drawings.

B. Chairs, Bolsters, Bar Supports, and Spacers: Sized and shaped for strength and support of reinforcement during installation and placement of concrete.

2.3 CONCRETE MATERIALS

A. Cement: ASTM C150, normal - Type 1 Portland, grey color.

B. Fly Ash: ASTM C618, Class C or F; loss on ignition (LOI) not to exceed 1 percent. Use fly ash from one single source for the whole Project.

C. Normal Weight Fine and Coarse Aggregates: ASTM C33; severe weather exposure.

D. Water: ASTM C94, para. 5.1.3

2.4 ADMIXTURES

A. Air-Entrainment: ASTM C 260; Master Builders Inc. "Micro-Air" or "MBVR", Euclid Chemical Co. "Air Mix," or approved.

B. Water Reducer Normal: ASTM C 494, Type A; Master Builders Inc. "Pozzolith/Polyheed," Euclid Chemical Co. "Eucon WR 75," or approved.

C. High Range Water Reducer (Superplasticizer): ASTM C 494, Type F or G and shall be of the second or third generation type. Shall be batch plant added, extend plasticity time, reduce water 20 to 30 percent. Master Builders Inc. "Rheobuild," Euclid Chemical "Eucon 37," or approved.

D. Accelerator: ASTM C 494, Type C or E, non-corrosive, non-chloride; Master Builders "Pozzutech 20," Euclid Chemical Co. "Accelgard 90," or approved.

E. Set Retarder: ASTM C494, Type B.

2.5 ACCESSORIES

A. Bonding Agent: Acrylic type; Sonneborn "Sonnocrete", W.R. Grace "Duraweld C", Euclid Chemical Co. "Flex-con", or approved.

B. Non-Shrink Grouts: ASTM C1107, Grade B; non-shrink non-catalyzed natural aggregate grout; minimum compressive strength of 7000 PSI at 28 days; 25 to 30 second flow when tested in accordance with ASTM C939 at 45 to 90 degrees F; cement gray in color; Master Builders Inc. "Masterflow 928," Euclid Chemical Co. "HiFlow Grout," or approved.

C. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain, or adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces when applied to forms or form liners.

D. Curing Materials:
   1. Waterproof Sheet Material: Waterproof paper in accordance with ASTM C171; reinforced waterproof kraft paper; white color at exterior applications; Burke Kraft Curing Paper Type I-SK-30, or approved.
   2. Mats and Burlap: Fabric covering composed of quilted polyethylene sheeting laminated to outer covering of burlap, cotton, or other approved fabric; outer covering shall weigh not less than 6 ounces per square yard.
   3. Curing Compound: ASTM C309; clear or translucent with fugitive dye; moisture loss not more than 0.055 gr./sq.cm. when tested in accordance with ASTM C156 and applied in a single coat at the manufacturers recommended rate. Euclid Chemical Co. "SuperFloor Coat" or "Floorcoat," or approved.
   4. Curing/Sealing Compound: ASTM C309; water based curing compound; Euclid Chemical Company "Aqua-Cure," Sonneborn "Kur-N-Seal WB," Burke by Edoco "Spartan-Cote WB II," or approved.

E. Underslab Vapor Retarder: ASTM E1745, Class A; one of the following:

1. "Stego Wrap 15 Mil Vapor Barrier" by Stego Industries, LLC (877-464-7834).
2. "Vapor Block 15" by Raven Industries (800-635-3456).
3. "Griffolyn 15 Mil Green" by Reef Industries, Inc. (800-231-6074).
4. “Perminator 15 Mil” by WR Meadows, Inc. (847-214-2100)
5. “Florprufe 120” by WR Grace (866-333-3726).

F. Prefabricated Slab Construction Joints: Burke by Edoco "Keyed Kold Joint," with splice plates, stakes, and driving accessories, or approved; depth 1/2 inch less than slab thickness, galvanized sheet metal tongue and groove joint form, with knockouts for passing reinforcing bars through.

G. Preformed Joint Fillers:
1. Non-extruding type; ASTM D1751; Sonneborn "Expansion Joint Filler,” WR Meadows “Sealtight Fiber”, " Burke by Edoco "Fiber expansion Joint,” or approved.
2. Joint Cap: Strippable plastic type; W.R. Meadows "SealTight Snap-Cap", Burke by Edoco "Joint Cap", or approved; width to match expansion joint filler material.

H. Finishing Aid: Evaporation retardant for preventing rapid drying during hot windy weather, Master Builders "Confilm."

2.6 CONCRETE MIX

A. Mix concrete in accordance with ASTM C94, and in accordance with the requirements indicated on the structural drawings.

B. Concrete at slabs on grade shall have a maximum water/cement ration of 0.45.

C. Admixtures:
1. All concrete shall contain the specified water reducing or high range water reducing admixture, except concrete with a required water/cement ratio of 0.45 or lower shall contain a high range water reducing admixture.
2. All concrete required to be air entrained shall contain air entraining admixture to produce 4% to 6% air.
3. All concrete placed in ambient temperatures from 40 degrees F to 20 degrees F, and all slab concrete placed in ambient temperatures below 50 degrees F, shall contain an accelerator at the manufacturer's required dosage.
4. All concrete placed in ambient temperatures of 90 degrees F or above, shall contain a set retarder at the manufacturer's required dosage.

D. Provide 28 day compressive strengths as indicated on the Structural Drawings. Where not indicated on the Structural Drawings, provide minimum 3000 psi compressive strength unless indicated otherwise.

E. Maximum amount of fly ash is indicated on the Structural Drawings.

2.7 REINFORCEMENT FABRICATION

A. Fabricate as indicated and in accordance with ACI 315.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence. Notify the Architect in writing of conditions detrimental to the proper and timely completion of the work.

B. Do not begin installation until all unsatisfactory conditions are resolved. Beginning work constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.2 FORMWORK ERECTION

A. Verify lines, levels, and measurement before proceeding with formwork. Align form joints.

B. Use plywood forms, unless other systems are approved by the Architect.

C. Use form coating on forms in accordance with the manufacturer's recommendations. Verify that form coatings will not affect the bond of subsequent concrete surface treatments.

D. Coordinate with work of other Sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.

E. Tolerances: Comply with ACI 117.

F. Where earth forms are used, hand trim sides and bottoms of earth forms. Remove loose dirt.

3.3 REINFORCEMENT

A. Place, support, and secure reinforcement against displacement.

B. Locate reinforcing splices not indicated on the drawings at points of minimum stress.

C. Provide laps and concrete cover as indicated in the Drawings.

3.4 UNDERSLAB VAPOR RETARDER

A. Place, protect, and repair vapor-retarder sheets according to ASTM E 1643 and manufacturer's written instructions under all interior slabs-on-grade.

B. Lap and seal all seams a minimum of 6 inches, seal around all penetrations, lap and seal against foundation walls and footings with manufacturer’s recommended sealing tape or mastic.

3.5 PLACING CONCRETE

A. In accordance with ACI 301.

B. Bonding Agent: Mix thoroughly and apply strictly in accord with the manufacturer's instructions; do not use when ambient temperature is below 45 degrees F. Place concrete in contact immediately while bonding agent is still tacky.

3.6 SUBSEQUENT TREATMENT FOR FORMED SURFACES

A. Provide smooth form finish for concrete to remain exposed in the finished work; rough form finish for concrete to remain concealed in the finished work.

3.7 SLABS

A. Expansion Joints for Slabs on Grade:
   1. Place expansion joints at locations indicated and where exterior slabs abut concrete walls, the building perimeter, and other fixed objects abutting or within the slab area. At exterior sidewalks, place expansion joints at maximum 20 foot intervals unless otherwise indicated.
   2. Form joints 1/2 inch wide x full depth of slab.
   3. Form expansion joints with preformed joint filler. Install strippable joint at joints to receive sealant specified in Section 079200.
   4. Tool expansion joints to 1/4 inch radius.
   5. Discontinue reinforcing at the expansion joint.
   6. Place perpendicular to longitudinal axis of wall and curbs. Where possible, make joints of curbs coincide with joints in walks.

B. Control Joints for Slabs on Grade:
   1. Make joints straight; perpendicular or parallel to building lines and slab edges, as appropriate.
   2. Control joints shall be saw cut or tooled, unless indicated otherwise.
   3. Radius tooled control joints to match expansion joints.
   4. Control joints shall penetrate the slab a minimum of 1/4 the thickness of the slab and shall be 3/16 inch in width minimum; 1/4 inch width in sidewalks.
   5. Space control joints at the locations indicated, except when not indicated locate in at 32 times the slab thickness. At exterior sidewalks, place control joints at maximum 5 foot intervals .
   6. Align joints with column lines when ever possible. Joints shall form rectangular panels with the long side less than 1-1/2 times the length of the short side. Provide circular or diamond shaped

joint lines around columns. Locate control joints at reentrant corners. Coordinate with placement of joints in tile surfaces.

C. Construction Joints: Place at either expansion or control joint locations for slab on grade construction.

D. Curing:
   1. Moisture cure all concrete for a minimum of 7 days, unless approved or specified otherwise.
   2. Use curing/sealing compound on concrete slabs scheduled to receive sealer.
   3. A curing compound may be used on all exterior slabs, sidewalks, and curbs.
   4. Use waterproof sheet material, mats or burlap at surfaces to receive subsequent bonded finish materials, including concrete stain and sealing compound. A curing compound may be used on surfaces to receive subsequent bonded finish materials, provided the curing compound is approved in writing by the manufacturer of the adhesive or the bonding finish material. Curing compound may also be used on surfaces to receive subsequent bonded finish materials, provided the curing compound is removed with shot blasting or other approved method prior to installation of bonded materials.
   5. Apply curing compounds and curing/sealing compounds in accordance with the manufacturer's recommendations.
   6. Maintain concrete temperatures above 50 degrees F.

E. Finishes:
   1. Full Trowel finish interior floor slab surfaces, unless specified otherwise.
   2. Light steel trowel finish interior floor slab surfaces scheduled to receive tile, carpet, or other similar bonded materials.
   3. Broom finish exterior slabs, sidewalks, and curbs.

F. Curing/Sealing Compound: Apply a second coat of curing/sealing compound to concrete slabs scheduled to receive sealer. Clean floor and apply just prior to substantial completion. Apply in accordance with the manufacturer's recommendations.

G. Tolerance: Provide Random Traffic floor tolerances as follows, when measured in accordance with ASTM E1155, including those floors to receive subsequent finishes.
   1. Slab on Grade at exposed slab conditions: F_F 45, F_L 35, over test area; F_F 30, F_L 24, minimum local value.
   2. Slabs on Grade to receive thinset flooring and resilient floor covering : F_F 35, F_L 25, over test area; F_F 24, F_L 17, minimum local value.
   3. Slabs on Grade to receive carpet: F_F 25, F_L 20, over test area; F_F 17, F_L 15, minimum local value.

END OF SECTION