CONCRETE NOTES

1. CODES:

COMPLY WITH THE FOLLOWING LATEST EDITIONS AND CURRENT AMENDMENTS:

1.1 ACI 301 "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS"
1.2 ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE"
1.3 CRSI "CONCRETE REINFORCING STEEL INSTITUTE, MANUAL OF STANDARD PRACTICE"

2. TESTING:

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3. SUBMITTALS: INTENTIONALLY LEFT BLANK

4. MATERIALS:

4.1 REINFORCING STEEL: GRADE 60, ASTM 615, NEW DEFORMED BARS.
4.2 REINFORCING FOR SLABS: EQUAL TO FIBERMESH, 1.5 lbs/CY CONCRETE, OR 6x6 W1.4xW1.4 WWF.
4.3 MIXING WATER SHALL BE POTABLE, FREE OF ANY SUBSTANCES THAT MAY BE DELETRIOUS TO THE CONCRETE OR REINFORCING STEEL.

5. CONCRETE MIX:

5.1 EXTERIOR SLABS:
-CEMENT SHALL BE ASTM 150, TYPE II PORTLAND CEMENT
-28 DAY COMPRESSIVE STRENGTH: 4000 PSI
-MAX. AGG. SIZE: ¾"
-AIR CONTENT: 6% + 1% BY VOLUME
-MAX WATER-CEMENT RATIO: 0.45
-AGGREGATE SHALL CONFORM TO ASTM C33

5.2 INTERIOR SLABS:
-CEMENT SHALL BE ASTM 150, TYPE II PORTLAND CEMENT
-28 DAY COMPRESSIVE STRENGTH: 4000 PSI
-MAX. AGG. SIZE: ¾"
-AIR CONTENT: 5% + 1% BY VOLUME (ONLY IF SLAB IS EXPOSED TO FREEZING)
-MAX WATER-CEMENT RATIO: 0.45
-AGGREGATE SHALL CONFORM TO ASTM C33

5.3 WALLS AND FOOTINGS:
-CEMENT SHALL BE ASTM 150, TYPE II PORTLAND CEMENT
-28 DAY COMPRESSIVE STRENGTH: 3000 PSI
-MAX. AGG. SIZE: 3/4"
-AIR CONTENT: 5% + 1% BY VOLUME
-MAX WATER-CEMENT RATIO: 0.50
-AGGREGATE SHALL CONFORM TO ASTM C33

CONCRETE NOTES (CONT).

5.3 ADMIXTURES:

PROVIDE ADMIXTURES WHICH ARE CHEMICALLY COMPATIBLE FOR THEIR INTENDED USE. COMPLY WITH MANUFACTURERS INSTRUCTIONS FOR USE. BASE DOSAGE RATES ON CEMENT CONTENT. CALCIUM CHLORIDE IS NOT ALLOWED.

5.3.1 HIGH RANGE WATER REDUCERS (SUPER PLASYCIZERS): EQUAL TO DARACEM 100 BY W.R. GRACE & CO., ASTM C-494.
5.3.2 ACCELERATORS: EQUAL TO DARASET BY W.R. GRACE & CO., ASTM C-404 TYPE C OR E.
5.3.3 AIR ENTRANCING: EQUAL TO "DARAVAIR" BY W.R. GRACE & CO., ASTM C-260 AND ARMY CORPS CRD-C-13.

5.4 CONCRETE SURFACE COATINGS:

5.4.1 CURING COMPOUND: "KURE-N-SEAL" BY SONNEBORN, OR EQUIVALENT.
5.4.2 BITUMINOUS DAMPPROOFING: EQUAL TO BRUSH GRADE FOUNDATION COATING BY EUCLID.

5.5 FORMS AND RELATED MATERIAL:

5.5.1 FORMS FOR CONCRETE SURFACES THAT WILL BE EXPOSED IN THE FINISHED BUILDING SHALL BE PLYFORM CLASS I, B-B EXTERIOR TYPE CONFORMING TO U.S. PRODUCT STANDARD PS 1. FORMS FOR CONCRETE SURFACES NOT EXPOSED IN THE FINISHED BUILDING MAY BE PLYFORM OR MATCHED LUMBER.
5.5.2 FORM OIL USED ON SURFACE OF FORMS SHALL BE A NON-STAINING TYPE.

5.6 ALUMINUM PRODUCTS:

5.6.1 NO ALUMINUM CONDUIT, PIPE, INSERTS, REGLETS, ETC. SHALL BE PLACED IN ANY CONCRETE, UNLESS COATED WITH BITUMINOUS DAMPPROOFING.
5.6.2 NO EQUIPMENT MADE OF ALUMINUM OR ALUMINUM ALLOYS SHALL BE USED FOR PUMP LINES, TREMIES OR CHUTES IN CONVEYING CONCRETE TO POINT OF PLACEMENT.

5.7 GROUT:

5.7.1 NON-SHRINK GROUT FOR USE UNDER COLUMN BASE PLATES AND BEAM BEARING PLATES SHALL BE EMBECO GROUT #885, PRE-MIXED, AS MANUFACTURED BY MASTER BUILDERS, OR APPROVED EQUIVALENT.

5.8 PREFORMED EXPANSION JOINT FILLER:

5.8.1 A NON-EXTENDING AND RESILIENT BITUMINOUS TYPE JOINT FILLER, ½" THICK.

5.9 EMBEDDED ITEMS:

5.9.1 EMBEDDED ITEMS SUCH AS ANCHOR BOLTS, ETC., SHALL BE INSTALLED USING A TEMPLATE AND BE SECURELY HELD IN PLACE DURING CONCRETE PLACEMENT.

5.10 SPACERS, SUPPORTS AND FASTENERS:

5.10.1 FORM SPACERS, REINFORCING TIES AND CHAIRS, AND OTHER DEVICES NEEDED FOR PROPERLY SPACING, SUPPORTING, AND FASTENING REINFORCEMENET SHALL BE PROVIDED. CLAY BRICKS ARE NOT ALLOWED FOR USE AS SLAB STEEL BOLSTERS.

5.11 VAPOR BARRIER:

5.11.1 UNDERSLAB MOISTURE VAPOR BARRIER EXCEEDING ASTM E1745 A,B,C (MAX 0.01 PERMS).
PRODUCTS: WR MEADOWS 10 MIL "PERMINATOR"
STEGO INDUSTRIES 15MIL "STEGOWRAP"
PLACE VAPOR BARRIER BETWEEN SLAB AND SUB-GRADE (¾" CRUSHED STONE).

6. CONSTRUCTION PRACTICES:

6.1 REINFORCEMENT:

COMPLY WITH REQUIREMENTS OF CRSI, LATEST EDITION.

6.1.1 MINIMUM CONCRETE COVER: 3" FOR CONCRETE CAST AGAINST SOIL; 2" FOR OTHER CONCRETE, UNLESS OTHERWISE SHOWN.

6.2 DEVELOPMENT AND SPLICING:

PROVIDE DEVELOPMENT AND TENSION LAP SPLICE LENGTHS IN ACCORDANCE WITH THE FOLLOWING, UNLESS NOTED OTHERWISE ON PLANS:

DEVELOPMENT BAR SIZE	LENGTH*	CLASS C* LAP SPLICE
#4	12	16"
#5	12	20"
#6	15	26"
#7	21	36"
#8	28	48"

*INCREASE BY 30% FOR BARS SPACED <6".

6.3 CHAMFERS:

CHAMFER ALL EXPOSED EDGES AND CORNERS OF CONCRETE ¾" OR 1" SIMILAR THROUGHOUT.

6.4 JOINTS:

6.4.1 CONSTRUCTION JOINTS: PLACE PERPENDICULAR TO THE MAIN REINFORCEMENT. CONTINUE REINFORCEMENT ACROSS CONSTRUCTION JOINTS. PROVIDE KEYWAYS AT LEAST 1½" (UNLESS OTHERWISE SHOWN) DEEP IN CONSTRUCTION JOINTS IN WALLS, SLAB, AND BETWEEN WALLS AND FOOTINGS. ACCEPTED BULKHEADS DESIGNED FOR THIS PURPOSE MAY BE USED IN SLABS. PROVIDE WATERSTOP WHERE INDICATED.

6.4.2 ISOLATION JOINTS: PROVIDE IN SLABS-ON-GRADE AT POINTS OF CONTACT BETWEEN SLABS-ON-GRADE AND VERTICAL SURFACES, SUCH AS FOUNDATION WALLS, GRADE BEAMS, COLUMN PEDESTALS, AND ELSEWHERE AS NECESSARY.

6.4.3 CONTRACTION (CONTROL) JOINT: PROVIDE IN SLABS-ON-GRADE BY USING INSERTS OR BY SAW CUTTING TO A DEPTH OF ¼ THE SLAB THICKNESS. PROVIDE A ONE PART ELASTOMERIC JOINT SEALANT TO JOINT GROOVE, A MINIMUM OF 60 DAYS AFTER SLAB PLACEMENT UNLESS OTHERWISE APPROVED.

6.5 CONCRETE MIXING:

6.5.1 READY-MIXED CONCRETE SHALL BE MIXED AND DELIVERED IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN ASTM C94.
6.5.2 ALL CONCRETE SHALL BE MIXED UNTIL THERE IS A UNIFORM DISTRIBUTION OF THE MATERIALS BEFORE DISCHARGE. THE MIXING SHALL BE CONTINUOUS AFTER THE WATER HAS BEEN ADDED TO THE MIX IN THE DRUM.
6.5.3 NO CONCRETE SHALL BE PLACED IN THE FORMS MORE THAN 90 MINUTES AFTER THE WATER HAS BEEN ADDED.
6.5.4 AFTER THE MAXIMUM WATER CEMENT RATIO HAS BEEN ACHIEVED, RETEMPERING OF THE CONCRETE WILL NOT BE ALLOWED, UNLESS APPROVED BY ENGINEER.

CONCRETE NOTES (CONT).

6.6 CONCRETE PLACEMENT:

6.6.1 DEPOSIT CONCRETE CONTINUOUSLY IN LAYERS NOT DEEPER THAN 24" OVER PREVIOUS LAYERS WHICH ARE STILL PLASTIC. AVOID COLD JOINTS. CONSOLIDATE CONCRETE BY MECHANICAL VIBRATING EQUIPMENT, SUPPLEMENTED BY HAND-SPACING, RODDING AND TAMPING. DO NOT USE MECHANICAL VIBRATORS TO TRANSPORT CONCRETE.
6.6.2 HOT WEATHER PLACING: COMPLY WITH ACI 306, LATEST EDITION. MAINTAIN A FRESH CONCRETE TEMPERATURE OF NOT LESS THAN 50°F AND NOT MORE THAN 80°F AT THE POINT OF PLACEMENT.

6.7 CONCRETE CURING:

COMPLY WITH ACI 308, LATEST EDITION. COMPLY WITH ACI 306 FOR HOT WEATHER CONCRETING. PROVIDE A MINIMUM OF A 7 DAY CONTINUOUS MOISTURE CURE BY COVERING CONCRETE SURFACE WITH A WET ABSORPTIVE COVER; MAINTAIN SATURATED COVER CONDITION. ALTERNATIVE CURING METHODS WILL ONLY BE ALLOWED IF APPROVED BY ENGINEER. CONTRACTOR WILL SUBMIT ALTERNATIVE CURING PRODUCTS AND METHODS FOR REVIEW AND APPROVAL. ALSO, MAINTAIN CONCRETE CURING TEMPERATURE ABOVE 50°.

6.7.1 SLABS: USE MOISTURE CURE OR CURING COMPOUND. APPLY CURING COMPOUND WITHIN 2 HOURS OF FINAL FINISHING BY SPRAY OR ROLLER. RECOAT AREAS SUBJECT TO HEAVY RAINFALL. DO NOT USE CURING COMPOUND ON SLABS WHICH WILL RECEIVE LIQUID FLOOR HARDENER OR OTHER FINISHES.

6.7.2 FORMED SURFACES: CURE FORMED SURFACES WITH FORMS IN PLACE FOR ENTIRE CURING PERIOD, UNLESS ALTERNATE METHODS ARE APPROVED BY THE ENGINEER. CONTACT STRUCTURAL ENGINEER @ 207-878-1751 FOR ALTERNATIVE CURING METHODS. DURING COLD WEATHER CURING, PROVIDE CAST-IN THERMOMETERS FOR MONITORING CONCRETE CURING TEMPERATURE AT LOCATIONS AS DIRECTED BY ENGINEER. MAINTAIN A 50°F WITH USE OF INDIRECT HEAT OR INSULATIVE BLANKETS.

6.8 ANCHOR BOLTS: USE TYPE, SIZE, AND LENGTH AS INDICATED ON PLANS.

EARTHWORK NOTES

1. SITE WORK AND CONCRETE CONTRACTORS ARE REQUIRED TO REVIEW THE ONSITE SUBSURFACE SOIL CONDITIONS WITH THE SER AT THE START OF INITIAL CONSTRUCTION. SITE CONTRACTOR WILL NOTIFY SER AFTER EXCAVATION HAS STARTED AND PRIOR TO THE PLACEMENT OF ANY STRUCTURAL FOUNDATIONS.

2. REMOVE ALL TOPSOIL AND UNCONTROLLED FILL FOR THE AREAS RECEIVING BUILDING FOUNDATIONS.

3. BACKFILL TO THE NECESSARY SUBGRADES REQUIRED ON THE STRUCTURAL FOUNDATION PLANS WITH CONTROLLED STRUCTURAL FILL MATERIAL MEETING THE FOLLOWING GRADATION:

PERCENT PASSING	SCREEN OR SIEVE SIZE
6	100
3	90-100
NO. 4	35-70
NO. 40	5-35
NO. 200	0-5

4. PLACE CONTROLLED STRUCTURAL FILL IN UNIFORM LIFTS AND COMPACT TO A MINIMUM OF 95% OF THE MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D1557 "MODIFIED PROCTOR DENSITY".

5. PROVIDE SITE GRADING AROUND THE PERIMETER OF THE BUILDING TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE FOUNDATION DURING AND AFTER CONSTRUCTION .

6. MAINTAIN THE INTEGRITY OF NATURAL SOILS AND CONTROLLED STRUCTURAL FILLS DURING CONSTRUCTION. PROTECT FOOTING AND STRUCTURE SUBGRADES AGAINST FREEZING AND EXCESSIVE WETTING. REMOVE AND REFILL FROZEN SUBGRADES, MOISTURE CONDITION, OR REPLACE EXCESSIVELY WET SUBGRADE MATERIALS.

7. NOTIFY ENGINEER TO OBSERVE SUBGRADES PRIOR TO PLACING FOOTINGS. FOOTINGS ARE DESIGNED FOR A MIN. SOIL BEARING CAPACITY OF 2000PSF, OR FOR BEARING ON SOUND LEDGE.

8. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER IF LEDGE IS ENCOUNTERED TO DETERMINE PINNING REQUIREMENTS.

9. ALL FOOTINGS SHALL EXTEND A MINIMUM OF 4'-6" BELOW EXTERIOR FINISHED GRADE, OR BE DOWELED TO LEDGE

10. PROOF ROLL SUBGRADE PRIOR TO SLAB CONSTRUCTION. PROVIDE STRUCTURAL FILL MEETING THE GRADATION SPECIFIED HEREIN FOR FILL MATERIALS BELOW THE SLAB, MAXIMUM PERCENT PASSING 200 SIEVE = 5%.

11. COMPACT CONTROLLED STRUCTURAL FILLS IN ACCORDANCE WITH THE FOLLOWING SCHEDULE AND ASTM D1557. USE ONLY HAND-OPERATED EQUIPMENT ADJACENT TO WALLS. FILL BOTH SIDES OF WALLS TO EQUAL ELEVATIONS BEFORE COMPACTING.

DEGREE OF COMPACTION: COMPACT TO THE FOLLOWING MINIMUM DENSITIES:

FILL AND BACKFILL LOCATION	DENSITY
UNDER STRUCTURE FOUNDATIONS	95% OF MAX.
TOP 2 FEET UNDER PAVEMENT	95%
BELOW TOP 2 FEET UNDER PAVEMENT	92%
TRENCHES THROUGH UNPAVED AREAS	90%
EMBANKMENTS	90%
PIPE BEDDING	92%
BESIDE STRUCTURE FOUNDATION WALLS, TANK WALLS AND RETAINING WALLS	90%
UNDER PIPES THROUGH STRUCTURAL FILLS	90%
UNDER DRAIN FILTER SAND	92%

MAXIMUM DENSITY: ASTMD1557, MODIFIED.

FIELD DENSITY TESTS: ASTMD1556 (SAND CONE), ASTMD2167 (RUBBER BALLOON), OR ASTMD2922 (NUCLEAR METHODS).

12. CONTRACTOR IS REQUIRED TO CONFORM TO OSHA (29 PART 1926.650-652) SUBPART P "CONSTRUCTION STANDARD FOR EXCAVATIONS".

STATE OF MAINE
AARON L. WILSON
No. 10429
LICENSED
PROFESSIONAL ENGINEER

Reviewed for Code Compliance
Inspection Division
Portland, Maine
Date: 10/15/15

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PROJECT: 9,900 SF BUILDING
81 INDUSTRIAL WAY, PORTLAND, MAINE
FOR: DEERFIELD 91 INDUSTRIAL, LLC

SHEET TITLE: STRUCTURAL NOTES
ISSUED FOR CONSTRUCTION

REVISIONS

No.	BY	DESCRIPTION	DATE
1			
2			
3			
4			

DATE : 8/31/15
SCALE : AS NOTED
DESIGN BY: ASW
DRAWN BY: RSC
FILE #:
PROJECT NUMBER: 15231
SHEET NO: S3