CAST-IN PLACE CONCRETE SPEC'S ON DRAWING

1. CONCRETE SHALL MEET THE PROVISIONS OF ASTM C-94, READY MIX CONCRETE. PORTLAND CEMENT CONFORMING TO ASTM C-150, TYPE I, IA OR II, IIA SHALL BE USED. IF TYPE I OR II IS USED AN ADDED AIR ENTRAINMENT AGENT, CONFORMING TO ASTM C-260 SHALL BE USED. CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4000 PSI (CLASS 4000). THE SLUMP SHALL BE (4) INCHES ± (1) INCH. THE AIR ENTRAINMENT SHALL BE 4%-6%.

2. SUBBASE MATERIAL (#57 AGGREGATE, CRUSHED GRANITE) SHALL CONSIST OF A MIX OF WELL-GRADED GRAVEL MATERIAL WITH 100% PASSING A (1-1/2) INCH SCREEN, 95-100% PASSING A (1") SCREEN, 25-60% PASSING (1/2") SCREEN, 0-10% PASSING A (#4) SCREEN AND 0-5% PASSING A (#8) SCREEN. COMPACTION OF EACH LAYER OF SUBBASE COURSE SHALL BE BY A MINIMUM OF (2) PASSES OVER THE ENTIRE SURFACE LAYER WITH A HAND DIRECTED MECHANICALLY POWERED VIBRATING PLATE COMPACTOR (WACKY PACKER OR JUMPING JACK). OR VIBRATORY ROLLER OR BY AN APPROVED EQUIVALENT METHOD. AS CRUSHED GRANNITE CANNOT BE COMPACTED IN THE TRUE SENSE, THE COMPACTION PROCESS IS INTENDED TO INTERLOCK STONE FACETS SUCH THAT A SOLID UNIFORM INTERLOCKED LAYER HAS BEEN FORMED.

3. THE SUBGRADE SHALL BE WELL DRAINED AND PROVIDE A FIRM UNIFORM SUPPORT FOR THE SUBBASE MATERIAL. ALL SOD AND OTHER ORGANIC MATTER SHALL BE STRIPPED FROM THE SUBGRADE.

4. WELDED WIRE FABRIC SHEETS SHALL BE (6) INCHES X (6) INCHES-W2.9 X W2.9, MEETING THE REQUIREMENTS OF ASTM A-185. SPLICES OF WELDED WIRE FABRIC SHEETS SHALL BE PROVIDED BY OVERLAPPING (3) CROSS-WIRES. WELDED WIRE FABRIC SHALL BE SUPPORTED WITH PRECAST CONCRETE BRICKS (NOT CLAY BRICKS) OR METAL OR PLASTIC CHAIRS SPACED AT A MAXIMUM OF (24) INCHES CENTER-TO-CENTER (C-C). MINIMUM PROTECTIVE COVER SHALL BE (1-1/2) INCHES FROM FORMED SURFACES AND FROM EARTH SURFACES OR GRAVEL BASE.

5. REINFORCING STEEL SHALL BE DEFORMED BARS GRADE 60 OR HIGHER AND CONFORM TO ASTM A-615. THE REINFORCING BARS SHALL BE SUPPORTED WITH PRECAST CONCRETE BRICKS (NOT CLAY BRICKS) OR METAL OR PLASTIC CHAIRS SPACED AT A MAXIMUM OF (36) INCHES CENTER-TO-CENTER (C-C). SPLICES OF REINFORCING BARS SHALL PROVIDE A LAP OF NOT LESS THAN (40) BAR DIAMETERS (25 INCHES FOR #5 REINFORCING BARS). MINIMUM PROTECTIVE COVER SHALL BE (2) INCHES FROM FORMED SURFACES AND FROM EARTH SURFACES OR FROM A GRAVEL BASE.

5. EXPANSION JOINTS FILLED WITH (1/2) INCH ASPHALT TREATED FIBER BOARD SHALL BE PLACED ALONG EXISTING STRUCTURES SUCH AS BUILDINGS, CONCRETE TANKS OR CONCRETE SLABS UNLESS OTHERWISE INDICATED.

7. CONTRACTION JOINTS SHALL BE FORMED IN FRESH CONCRETE EITHER BY SAW CUTTING. JOINTS SHALL BE FORMED AS SOON AS PRACTICAL AFTER (=4 hrs) CONCRETE FINISHING, BUT IN NO CASE LATER THAN (12) HOURS AFTER CONCRETE HAS BEEN PLACED. CONTRACTION JOINTS SHALL BE FORMED TO A DEPTH OF (1/4) OF SLAB THICKNESS + 1/4 INCH. CONTRACTION JOINTS SHALL BE SEALED WITH AN ELASTOMERIC JOINT SEALER MEETING ASTM C-920 IN ACCORDANCE WITH THE MANUFACTURER'S DIRECTIONS.

8. THE CONCRETE SURFACE SHALL BE PROVIDED WITH A BROOM FINISH.

9. IN ALL CASES CONCRETE SHALL BE CURED BY KEEPING THE SURFACE COOL AND MOIST FOR (7) DAYS AFTER PLACEMENT. IN LIEU OF APPLICATION OF MOISTURE, CONCRETE, EXCEPT AT CONSTRUCTION JOINTS, SHALL BE COATED WITH A CURING COMPOUND. THE COMPOUND SHALL BE SPRAYED ON MOIST CONCRETE SURFACES AS SOON AS FREE WATER HAS DISAPPEARED. THE CURING COMPOUND SHALL CONFORM TO ASTM C-309 AND SHALL BE TYPE 2, WHITE PIGMENTED. CURING COMPOUND SHALL BE APPLIED IN A UNIFORM LAYER OVER ALL SURFACES AT A RATE OF NOT LESS THAN (1) GALLON PER (150) SQUARE FEET.

10. IN HOT WEATHER, THE CONCRETE TEMPERATURE SHALL BE MAINTAINED BELOW 85°F DURING MIXING, CONVEYING AND PLACEMENT. CONCRETE MUST THEN BE KEPT MOIST AT ALL TIMES FOR AT LEAST (7) DAYS OR UNTIL CURING COMPOUND IS APPLIED AS IN PREVIOUS PARAGRAPH. REFER TO CONCRETE HOT WEATHER ACI GUIDANCE (THIS SHEET).

11. IN COLD WEATHER CONCRETE SHALL NOT BE MIXED OR PLACED WHEN DAILY ATMOSPHERIC TEMPERATURE IS LESS THAN 40°F UNLESS FACILITIES ARE PROVIDED TO PREVENT CONCRETE FROM FREEZING. THE USE OF ACCELERATORS OR ANTIFREEZE COMPOUNDS WILL NOT BE PERMITTED. THE TEMPERATURE OF THE CONCRETE AT THE TIME OF PLACING SHALL NOT BE LESS THAN 50°F AND SHALL BE MAINTAINED AT TEMPERATURES NOT LESS THAN 40°F FOR A PERIOD OF (3) DAYS. THERMAL BLANKETS IF USED SHALL HAVE SUFFICIENT R-VALUE TO PROTECT CONCRETE FOR THE EXPECTED TEMPERATURES.

CONCRETE PLACEMENT IN HOT WEATHER ACI GUIDANCE

THE PLACEMENT OF CONCRETE IN HOT WEATHER SHALL BE IAW THE ACI COMMITTEE ACI 305R-XX HOT WEATHER CONCRETING BULLETIN AND APPROVED BY THE "AHJ". HOT WEATHER CONCRETE PLACEMENT PROVISIONS NEED TO BE ONSITE AND IN-PLACE PRIOR TO INITIATING A HOT WEATHER CONCRETE POUR. WITHOUT THESE PROVISIONS THE QUALITY OF THE MIX AND / OR HARDENED CONCRETE WILL MOST LIKELY BE ADVERSELY EFFECTED DUE TO THE ACCELERATED RATE OF MOISTURE LOSS AND RATE OF CEMENT HYDRATION.

WHEN EITHER OF THE FOLLOWING CONDITIONS ARE MET AT THE TIME OF THE PROPOSED CONCRETE PLACEMENT:

1. A YIELD RATE OF EVAPORATION GREATER THAN 0.10 LB/FT²/HOUR (FORMULA BELOW) OR
2. WHEN TWO OR MORE OF THE FOLLOWING FACTORS ARE EXCEEDED:
   A. AMBIENT TEMPERATURE GREATER THAN 90 DEGREES FAHRENHEIT
   B. RELATIVE HUMIDITY LESS THAN 60 PERCENT
   C. WIND VELOCITY (AVERAGE) GREATER THAN 10 MPH

THE MIXED STATE OF THE CONCRETE SHALL NOT EXCEED 45 MINUTES PRIOR TO THE POUR UNLESS A SET-RETARDING ADMIXTURE MEETING THE REQUIREMENTS IN CHAPTER 8 OF THE PCA MANUAL HAS BEEN ADDED TO THE MIX. AND THE MODIFIED MIX HAS A PROVEN PERFORMANCE RECORD WITH POSITIVE CURE RESULTS UNDER THE SAME CONDITIONS. IF AN ADD MIXTURE IS REQUIRED BE SURE TO DISCUSS THE TRAVEL DISTANCE AND PLACEMENT TIME TO THE EXTENT THAT A RELIEABLE "JUST IN TIME" DELIVERY SCHEDULE CAN ESTABLISHED.

ONCE SET, MEASURES SHALL BE TAKEN TO PROVIDE A CONTROLLED CURE ENVIRONMENT TO PROTECT THE CONCRETE AND SLOW THE CURE PROCESS TO MITIGATE THE ADVERSE EFFECTS THAT WOULD RESULT DUE TO RAPID CURING.

RECOMMENDED ACTIONS TO REDUCE SURFACE MOISTURE LOSS AND RATE OF CEMENT HYDRATION:

- PLAN TO PLACE CONCRETE IN THE EARLY MORNING, LATE AFTERNOON OR EVENING.
- USE FOG SPRAY TO RAISE THE RELATIVE HUMIDITY OF THE AMBIENT AIR IN THE VICINITY OF THE FRESHLY POURED CONCRETE.
- MOIST (SOAKED BURLAP) CURE THE CONCRETE SURFACE AS SOON AS THE SURFACES ARE FINISHED AND CONTINUE FOR AT LEAST 24 HOURS.
- SCHEDULE TRUCK DELIVERY TO AVOID TRUCKS HAVING TO WAIT ONSITE THERE BY REDUCING THE CHANCES OF CONCRETE BEGINING TO SET.
- SUSPEND PLACEMENT UNTIL CONDITIONS IMPROVE.

CONCRETE PLACEMENT SHALL BE SUSPENDED WHEN:

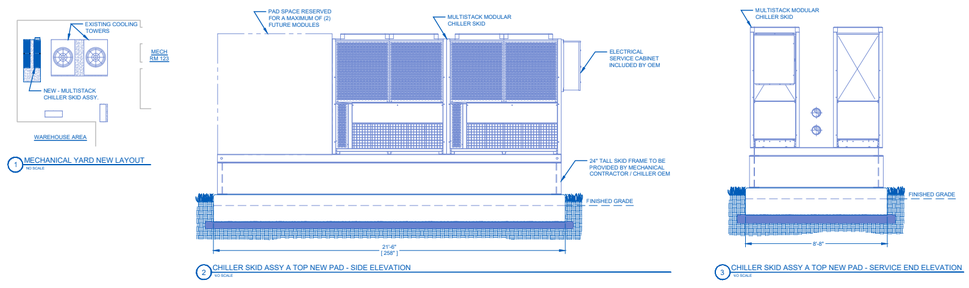
1. THE RATE OF EVAPORATION IS GREATER THAN 0.25 LB./FT²/HOUR (FORMULA BELOW) OR
2. WHEN ALL OF THE FACTORS ARE EXCEEDED:
   A. THE AMBIENT TEMPERATURE IS GREATER THAN 95 DEGREES FAHRENHEIT
   B. RELATIVE HUMIDITY LESS THAN 40 PERCENT
   C. WIND VELOCITY (AVERAGE) GREATER THAN 15 MPH

EVAPORATION FORMULA (*Taken From Design and Control of Concrete Mixtures, EB001*):

$E = (5t^{1.5} - R \times Ta^{0.5}) (1 + .4\ V) \times 10^{-6}$

WHERE:
E = RATE OF EVAPORATION, LBS./FT²/H;
Tc = CONCRETE SURFACE TEMPERATURE, F;
R = RELATIVE HUMIDITY IN PERCENT / 100;
Ta = AIR TEMPERATURE, F
V = AVERAGE WIND VELOCITY, MPH

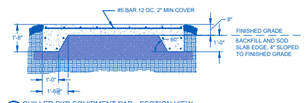
*IF THE WIND SPEED IS TAKEN AT AN ELEVATION OF 25FT+ V SHOULD BE ADJUSTED FOR GROUND LEVEL
Vnew = AVERAGE REPORTED WIND SPEEDS * .66



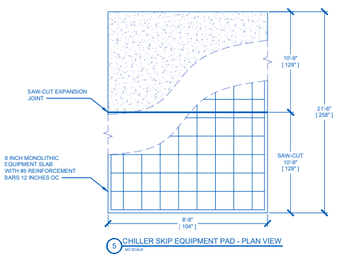
1 MECHANICAL YARD NEW LAYOUT — NO SCALE

2 CHILLER SKID ASSY A TOP NEW PAD - SIDE ELEVATION — NO SCALE

3 CHILLER SKID ASSY A TOP NEW PAD - SERVICE END ELEVATION — NO SCALE



4 CHILLER SKD EQUIPMENT PAD - SECTION VIEW — NO SCALE



5 CHILLER SKIP EQUIPMENT PAD - PLAN VIEW — NO SCALE

EQUIPMENT SLAB ON GRADE
THICKNESS AND STEEL RATIO MEET OR EXCEED ACI-318, 302R AND 360R REQUIREMENTS
DESIGN BASED UPON THE FOLLOWING:

-SUBGRADE MECHANICALLY COMPACTED = 95%
=JOINT SPACING: SINGLE JOINT AT MID-SPAN.
-STEEL GRADE 60
-(5) UNIFORM LOADS, 357 Lb/FT², 28'L
-SAFETY FACTOR: 2X
-REINFORCEMENT NON-STRUCTURAL
CRACK AND SHRINK CONTROL ONLY

VERIFIED REINFORCEMENT SPACING EXCEEDS SUBGRADE DRAG FORMULA TO COMPENSATE FOR FREEZE / THAW ENVIRONMENT.

MIX DESIGN
GENERAL USE 4,000 psi (28 day)

TEST AND PERFORMANCE REQUIREMENTS @ CONTRACTOR'S EXPENSE
SUBGRADE MOISTURE CONTENT TO BE VERIFIED: 10% - 20% DURING COMPACTION AND RE-VERIFIED PRIOR TO SETTING THE CONCRETE. TEST AREA TO BE SETUP ADJACENT TO SLAB TO PERFORM TEST DAY OF POUR.

SUBGRADE DENSITY: 95% OF MAXIMUM PROCTOR DENSITY, REPORT TO BE PROVIDED PRIOR TO PLACEMENT OF SUBBASE.

SUBBASE DENSITY: 100%, REPORT TO BE PROVIDED PRIOR TO CONCRETE PLACEMENT.

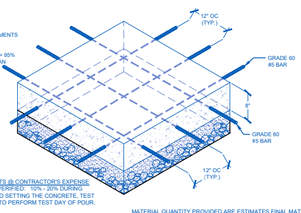
CONCRETE SLUMP: 4"± 1" TO BE RECORDED AND PHOTOGRAPHED THE DAY OF THE POUR

28 DAY COMPRESSION: MINIMUM 3,500 PSI, CYLINDER TO BE LEFT ONSITE IN TEST AREA DURING 28 DAY CURING PERIOD.

ALL TEST RESULTS ARE TO BE PROVIDED AS PART OF RECORD DOCUMENTATION SET, TIME SENSITIVE RESULTS ARE TO BE TURNED OVER TO THE GOVT PROJECT SITE LEAD PRIOR TO COMMENCEMENT OF DEPENDANT TASK.

PAD DRAINAGE SLOPE
-1/8" / 10 FT SPAN

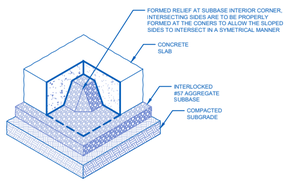
FINISH PROFILE
BROOM FINISH



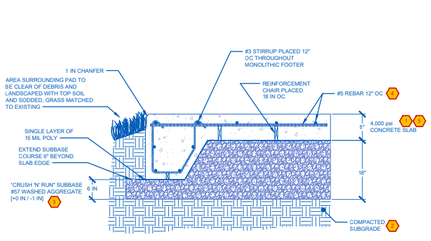
MATERIAL QUANTITY PROVIDED ARE ESTIMATES FINAL MATERIAL TAKE-OFF IS THE INSTALLING CONTRACTOR'S RESPONSIBILITY

SURFACE COURSE: 4,000 psi, 7 CUBIC YD
SUBBASE: #57 FINE / COURSE AGGERGATE, 9 CUBIC YD
STEEL: 650 LBS

1 CAST IN PLACE CONCRETE EQUIPMENT SLAB REQUIREMENTS — NO SCALE



3 MONOLITHIC SLAB SUBBASE INTERIOR CORNER RELIEF — NO SCALE



1. PLACE CONCRETE IN ACCORDANCE WITH THE FOLLOWING ACI GUIDES AND BEST PRACTICE FOR THE POUR ENVIRONMENT:

   GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION ACI 302.1R LATEST EDITION.
   HOT WEATHER CONCRETING ACI 305R LATEST EDITION.
   GUIDE TO CURING CONCRETE ACI 308R LATEST EDITION.

   WHEN ORDERING CONCRETE SPECIFY A BLEND OF FINE AND COURSE AGGERGATE, SIZE TO BE IN THE RANGE OF 1/4" TO 1". VERIFY MAX AGGREGATE SIZE DOES NOT TO EXCEED (1/4) THREE FOURTH OF OF THE MINIMUM CLEAR SPACE BETWEEN REINFORCEMENT BARS / WELDED WIRE FABRIC GRID SIZE (TO INCLUDE REINFORCEMENT TO BASE LAYER CLEARANCE, MIN 1-1/2").

2. SUBGRADE TO BE:
   A. FREE OF ORGANIC DECOMPOSABLE MATERIAL, TOP FILL ORGANIC SOIL TO BE REMOVED
   B. MOISTURE CONTENT TO BE WITHIN A RANGE OF 10% TO 20% (DURING COMPACTION AND CONCRETE PLACEMENT) USE THE HAND TEST AS A PRELIMINARY CHECK TO VERIFY MOISTURE CONTENT >> SQUEEZE A BALL OF SOIL IN YOUR HAND. IF IT'S POWDERY AND WON'T HOLD A SHAPE, IT'S TOO DRY. IF IT MOLDS INTO A BALL, THEN BREAKS INTO A COUPLE OF PIECES WHEN DROPPED, IT'S ABOUT RIGHT. IF IT LEAVES MOISTURE ON YOUR HAND AND DOESN'T BREAK WHEN DROPPED, IT'S TOO WET.
   C. DURING COMPACTION WATER IS TO BE APPLIED IN A MISTED FORM UNIFORMALLY OVER THE SUBGRADE MATERIAL. CARE SHOULD BE TAKEN NOT TO PROVIDE TO MUCH WATER DURING THE CONSOLADTION PROCESS.
   D. COMPACTED TO MINIMUM 95% OF THE MAXIMUM MODIFIED PROCTOR DENSITY.

3. SUBBASE TO BE:
   A. COMPOSED OF #57 PARTIALLY CRUSHED AND UNCRUSHED COURSE AGGREGATE COMBINED WITH FINE AGGREGATES (SAND) AND SOIL.
   B. LEVELED AND MECHANICALLY COMPACTED TO PROVIDED UNIFORM, LEVEL SMOOTH SUPPORT THROUGHOUT.
   C. DROPPED IN 4 INCH LAYERS THROUGHOUT COMPACTION PROCESS
   D. DURING COMPACTION WATER IS TO BE APPLIED IN A MISTED FORM UNIFORMALLY OVER THE SUBBASE MATERIAL. CARE SHOULD BE TAKEN NOT TO PROVIDE TO MUCH WATER DURING THE CONSOLADTION PROCESS.
   E. COMPACTED TO 100% DENSITY.

4. REINFORCEMENT TO BE:
   A. MAIN GRID SYSTEM TO HAVE A MINIMUM COVER OF 2", BAR ENDS MAY EXTEND INTO THE 1-3/4 - 1-1/2 RANGE
   B. FREE OF MUD, DIRT AND OIL
   C. SUPPORTED IN A MANNER THAT PROVIDES A CONSTANT ELEVATION THROUGHOUT, 36" MAX SUPPORT SPAN

5. IN HOT ENVIRONMENTS WHERE THE TEMPERATURE IS AT OR ABOVE 95°F. PRELIMINARY CURING STEPS ARE REQUIRED EARLY IN THE SLAB SET PERIOD. TO AVOID PLASTIC SHRINKAGE A CURING COMPOUND OR WET BURLAP NEED TO BE APPLIED TO THE SLAB TO PROMOTE A CURING PROCESS THAT REDUCES THE RISK OF CRACKING DUE TO RAPID WATER EVAPORATION. REFER TO THE FOLLOWING CURING PROCESS GUIDELINES BELOW. ENSURE THE SELECTED PROCESS CAN BE CARRIED OUT THROUGHOUT THE FULL CURING PROCESS:

   CURING COMPOUND APPLICATION

   PROVIDE AN ASTM C309 TYPE 2 CLASS MEMBRANE WHITE CURING COMPOUND WITH WHITE PIGMENT

   WITHIN TEN MINUTES OF FINISH WORK COMPLETION, APPLY A WHITE PIGMENTED MEMBRANE CURING COMPOUND. APPLY TWO COATS AT A RATIO OF 4 LITER : 25 SQ. METER [1 GAL : 250 SQ FT]. APPLY COATS ONE MINUTE APART.

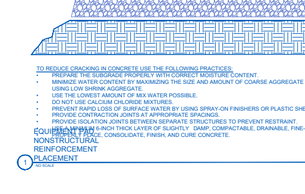
   WATER SOAKED BURLAP

   AFTER FINISH WORK COMPLETE AND SLAB SUFFICIENTLY HARD ENOUGH TO ALLOW WALKING ON WITHOUT MARRING THE SLAB SURFACE. COVER SLAB COMPLETELY WITH WATER SOAKED BURLAP.

   MAINTAIN DAMP BURLAP FOR 72 HOURS USING A WATER FOG SOAK OR SOAKER HOSES.

   DURING THE 72 HOUR PERIOD KEEP WATER SOAKED BURLAP COVERED WITH A WHITE POLYETHYLENE 15 MIL POLYSHEET.

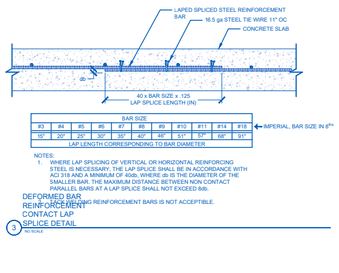
2 MONOLITHIC SLAB INSTALLATION DETAIL — NO SCALE



TO REDUCE CRACKING IN CONCRETE USE THE FOLLOWING PRACTICES:
- PREPARE THE SUBGRADE PROPERLY WITH CORRECT MOISTURE CONTENT.
- MINIMIZE WATER CONTENT BY MAXIMIZING THE SIZE AND AMOUNT OF COARSE AGGREGATE AND BY USING LOW SHRINK AGGREGATE.
- USE THE LOWEST AMOUNT OF MIX WATER POSSIBLE.
- DO NOT USE CALCIUM CHLORIDE MIXTURES.
- PROVIDE ADEQUATE CURING BY USING SPRAY-ON FINISHERS OR PLASTIC SHEETING.
- PROVIDE CONTRACTION JOINTS AT APPROPRIATE SPACINGS.
- PROVIDE ISOLATION JOINTS BETWEEN SEPARATE STRUCTURES TO PREVENT RESTRAINT.
- PLACE CONCRETE OVER A 6-INCH THICK LAYER OF SLIGHTLY - DAMP, COMPACTABLE, DRAINABLE, FINE-GRADE MATERIAL. CONSOLIDATE, CONSOLIDATE, FINISH, AND CURE CONCRETE.

EQUIPMENT SLAB NONSTRUCTURAL REINFORCEMENT PLACEMENT

1 — NO SCALE



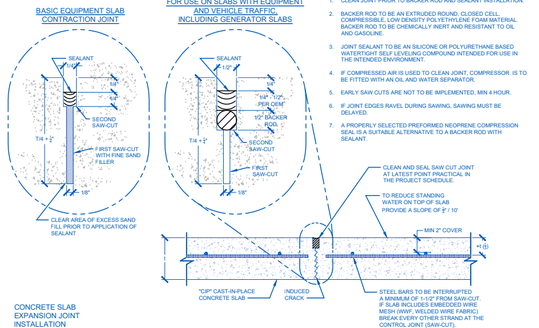
BAR SIZE											
#3	#4	#5	#6	#7	#8	#9	#10	#11	#14	#18	IMPERIAL, BAR SIZE IN #'s
15"	20"	25"	30"	35"	40"	45"	51"	57"	68"	91"	
LAP LENGTH CORRESPONDING TO BAR DIAMETER											

NOTES:
1. WHERE LAP SPLICING OF VERTICAL OR HORIZONTAL REINFORCING STEEL IS NECESSARY, THE LAP SPLICE SHALL BE IN ACCORDANCE WITH ACI 318 AND A MINIMUM OF 40db, WHERE db IS THE DIAMETER OF THE SMALLER BAR. THE MAXIMUM DISTANCE BETWEEN NON CONTACT PARALLEL BARS AT A LAP SPLICE SHALL NOT EXCEED 8db.
2. A BUTT SPLICING REINFORCEMENT BARS IS NOT ACCEPTIBLE.

DEFORMED BAR REINFORCEMENT CONTACT LAP SPLICE DETAIL

3 — NO SCALE

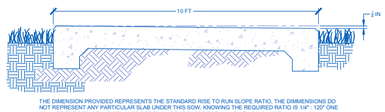
HEAVY USE SLAB CONTRCTION JOINT FOR USE ON SLABS WITH EQUIPMENT AND VEHICLE TRAFFIC, INCLUDING GENERATOR SLABS



1. CLEAN JOINT PRIOR TO BACKER ROD AND SEALANT INSTALLATION.
2. BACKER ROD TO BE AN EXTRUDED ROUND, CLOSED CELL, COMPRESSIBLE, LOW DENSITY POLYETHYLENE FOAM MATERIAL. BACKER ROD TO BE CHEMICALLY INERT AND RESISTANT TO OIL AND GASOLINE.
3. JOINT SEALANT TO BE AN SILICONE OR POLYURETHANE BASED WATERTIGHT SELF LEVELING COMPOUND INTENDED FOR USE IN THE INTENDED ENVIRONMENT.
4. IF COMPRESSED AIR IS USED TO CLEAN JOINT, COMPRESSOR IS TO BE FITTED WITH AN OIL AND WATER SEPARATOR.
5. EARLY SAW CUTS ARE NOT TO BE IMPLEMENTED, MIN 4 HOUR.
6. IF JOINT EDGES RAVEL DURING SAWING, SAWING MUST BE DELAYED.
7. A PROPERLY SELECTED PREFORMED NEOPRENE COMPRESSION SEAL IS A SUITABLE ALTERNATIVE TO A BACKER ROD WITH SEALANT.

CONCRETE SLAB EXPANSION JOINT INSTALLATION DETAIL

2 — NO SCALE



THE DIMENSION PROVIDED REPRESENTS THE STANDARD RISE TO RUN SLOPE RATIO, THE DIMMENSIONS DO NOT REPRESENT ANY PARTICULAR SLAB UNDER THIS SOW, KNOWING THE REQUIRED RATIO IS 1/4" - 12" ONE CAN USE THE RESULTANT OF 480 TO DETERMINE THE SLOPE FOR ANY GIVEN SLAB WIDTH:

EXAMPLE: 10' WIDE SLAB : 180" / 480 = 3/8" SLOPE

EQUIPMENT SLAB STANDARD SLOPE DETAIL

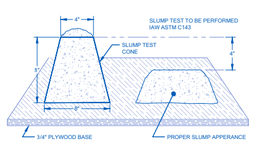
4 — NO SCALE

SLUMP TEST GUIDANCE

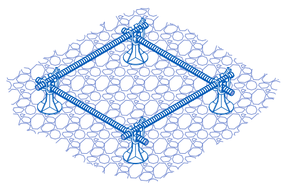
STEPS PERFORMED IN THE SLUMP TEST

1. FILL CONE IN THREE LIFTS, RODDING EACH ONE 25 TIMES THROUGH THE LIFT DEPTH; EACH TIME PENETRATING THE LAYER BELOW APPROXIMATELY 1 INCH FOR THE SECOND AND THIRD LIFTS. DO NOT TAP THE CONE.
2. EACH LIFT SHOULD FILL A THIRD OF THE VOLUME, HEIGHT OF CONCRETE FOR FIRST LIFT SHOULD BE 2-5/8", AND SECOND LIFT SHOULD BE 6-1/8".
3. AFTER THE LAST ROD, SCREED THE MATERIAL OFF THE TOP (AN 1/8" EXCESS) CONCRETE ABOVE TOP OF MOLD IS OPTIMUMS AND WIPE ANY CONCRETE FROM AROUND THE BASE OF THE CONE.
4. PULL CONE STRAIGHT UP WITH NO TWISTING TAKING ANYWHERE FROM 3 TO 7 FULL SECONDS (SPECS SAY 5 SECONDS +/- 2).
5. MEASURE SLUMP FROM THE TOP OF THE MOLD TO THE DISPLACED ORIGINAL CENTER OF THE CONCRETE. RECORD RESULTS TO THE NEAREST 1/4-INCH.
6. BEGIN AND COMPLETE SLUMP TEST WITHIN 2-1/2 MINUTES, MAXIMUM.
7. MAXIMUM SIZE AGGREGATE FOR SLUMP TEST IS 1-1/2", IF LARGER, WET SIEVE THROUGH A 1-1/2" SIEVE.
8. A (4") FOUR INCH SLUMP IS OPTIMAL TO PROVIDE GOOD WORKABLE MATERIAL THAT WILL EASILY FILL VOIDS.

IMPORTANT NOTE
SLUMPS LESS THAN 1/2" MAY NOT BE ADEQUATELY PLASTIC AND SLUMPS GREATER THAN 9" MAY NOT BE ADEQUATELY COHESIVE FOR THE SLUMP TEST TO HAVE SIGNIFICANCE.



1 SLUMP TEST GUIDANCE — NO SCALE



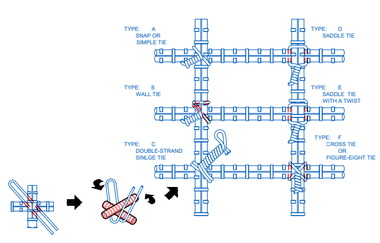
1. REBAR MATT TO BE CONSTRUCTED UTILIZING 16.5 GAUGE STEEL TIE WIRE
2. TACK WELDING STEEL REINFORCEMENT IS NOT ALLOWED.
3. VARIOUS TYPES OF STACKED AND UN-STACKED ARE ACCEPTABLE.
4. ENSURE ELEVATION OF REBAR REMAINS CONSTANT.
5. IF OIL IS TO BE USED ON SLAB FORMS, ENSURE NO OIL IS APPLIED TO REBAR.
6. REBAR IS TO BE FREE OF DIRT, MUD AND OIL PRIOR TO CONCRETE POUR.
7. REBAR IS TO BE STORED PROPERLY ON-SITE. REBAR IS NOT TO BE LEFT UNCOVERED OR LAYING IN DIRT. REBAR IS TO BE STORED ON SPACING PLANKS.
8. REBAR NOT TO PASS THROUGH CONCRETE SLAB.

FULL HEIGHT CHAIR OPTION

STACKED CHAIR OPTION

USE A STACKED CHAIR OPTION WHEN FULL HEIGHT CHAIRS ARE NOT APPLICABLE. ATTACHED CHAIR TO CONCRETE STAND-OFF WITH CONSTRUCTION ACHESIVE. CONCRETE STAND-OFF TO BE OF EQUAL OR GREATER STRENGTH THAN SLAB CONCRETE.

2 REINFORCEMENT SUPPORT CHAIR USE GUIDANCE — NO SCALE



NOTE:

TYPE A: SNAP TIE OR SIMPLE TIE
THE WIRE IS SIMPLY WRAPPED ONCE AROUND THE TWO CROSSING BARS IN A DIAGONAL MANNER WITH THE TWO ENDS ON TOP. THESE ARE TWISTED TOGETHER WITH A PAIR OF SIDECUTTERS UNTIL THEY ARE VERY TIGHT AGAINST THE BARS. THEN THE LOOSE OF THE WIRE ARE CUT OFF. THIS TIE IS USED MOSTLY ON FLOOR SLABS.

TYPE B: WALL TIE
THIS TIE IS MADE BY GOING ABOUT 7 ½ TIMES AROUND THE VERTICAL BAR, THEN DIAGONALLY AROUND THE INTERSECTION, TWISTING THE TWO ENDS TOGETHER UNTIL THE CONNECTION IS TIGHT, BUT WITHOUT BREAKING THE TIE WIRE, THEN CUTTING OFF THE EXCESS. THE WALL TIE IS USED ON LIGHT VERTICAL MATS OF STEEL.

TYPE C: DOUBLE-STRAND SINGLE TIE
THIS TIE IS A VARIATION OF THE SIMPLE TIE. IT IS ESPECIALLY FAVORED FOR HEAVY WORK.

TYPE D: SADDLE TIE
THE WIRES PASS HALFWAY AROUND ONE OF THE BAR ON EITHER SIDE OF THE CROSSING BAR AND ARE BROUGHT SQUARELY OR DIAGONALLY AROUND THE CROSSING BAR WITH THE ENDS TWISTED TOGETHER AND CUT OFF. THIS TIE IS USED ON SPECIAL LOCATIONS, SUCH AS ON WALLS.

TYPE E: SADDLE TIE WITH A TWIST
THIS TIE IS A VARIATION OF THE SADDLE TIE. THE TIE WIRE IS CARRIED COMPLETELY AROUND ONE OF THE BARS, THEN SQUARELY ACROSS AND HALFWAY AROUND THE OTHER EITHER SIDE OF THE CROSSING BARS, AND FINALLY BROUGHT TOGETHER AND TWISTED EITHER SQUARELY OR DIAGONALLY ACROSS. THE SADDLE TIE WITH TWIST IS USED FOR HEAVY MATS THAT ARE TO BE LIFTED BY A CRANE.

TYPE F: CROSS TIE OR FIGURE-EIGHT TIE
THIS TYPE OF TIE HAS THE ADVANTAGE OF CAUSING LITTLE OR NO TWIST IN THE BARS.

3 REINFORCEMENT TIE WIRE INSTALLATION GUIDANCE — NO SCALE