

TENSION LAP SPLICE LENGTH IN CONCRETE NOTES

- FOR HORIZONTAL BARS, VALUES IN THE TABLE SHALL BE MULTIPLIED BY 1.3 WHERE MORE THAN 12 INCHES OF FRESH CONCRETE IS CAST BELOW THE BAR.
- VALUES IN THE TABLE SHALL BE MULTIPLIED BY 1.5 FOR EPOXY COATED BARS WITH CLEAR COVER LESS THAN 3 BAR DIAMETERS OR CLEAR SPACING LESS THAN 6 BAR DIAMETERS. MULTIPLY VALUES IN TABLE BY 1.2 FOR ALL OTHER EPOXY COATED BARS.
- VALUES IN TABLE NEED NOT TO BE MULTIPLIED BY MORE THAN 1.7 DUE TO THE INCREASE FROM NOTES 1 AND 2.
- VALUES IN THE TABLE SHALL BE MULTIPLIED BY 1.33 WHERE LIGHT WEIGHT CONCRETE IS USED. LAP SPLICES IN TENSION ARE NOT PERMITTED FOR BAR LARGER THAN #11. A FULL MECHANICAL OR FULL WELDED SPLICE SHALL DEVELOP AT LEAST 1.25 ϕ OF THE BAR.
- WHERE CLEAR SPACING OF BARS BEING SPLICED IS AT LEAST 2 BAR DIAMETERS AND CLEAR COVER AT LEAST 1 BAR DIAMETER, USE CASE 1. FOR ALL OTHER BAR ARRANGEMENTS, USE CASE 2.
- VALUES IN THE TABLE ARE BASED ON 60ksi REBAR. FOR OTHER REBAR YIELD STRENGTHS, MULTIPLY VALUES IN THE TABLE BY THE SPECIFIED YIELD STRENGTH DIVIDED BY 60.
- WHERE BARS OF DIFFERENT SIZES ARE SPLICED, PROVIDED THE LAP LENGTH OF THE LARGER BAR.
- WELDED WIRE REINFORCEMENT (DEFORMED OR PLAIN WIRE) SHALL BE LAPPED ONE FULL MESH SQUARE PLUS 2 INCHES MINIMUM, BUT NOT LESS THAN 12 INCHES.
- REBAR IN ALL CONCRETE MEMBERS SHALL BE SPLICED IN ACCORDANCE WITH "TENSION LAP SPLICE LENGTH" TABLE, UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS.

TENSION LAP SPLICE LENGTH IN CONCRETE - 60 KSI REBAR TABLE (INCHES)

| f _c = | 3,000psi | 3,000psi | 3,500psi | 3,500psi | 4,000psi | 4,000psi | 5,000psi | 5,000psi |
|------------------|----------|----------|----------|----------|----------|----------|----------|----------|
| BAR SIZE | CASE 1 | CASE 2 | CASE 1 | CASE 2 | CASE 1 | CASE 2 | CASE 1 | CASE 2 |
| #3 | 22 | 33 | 20 | 30 | 19 | 28 | 17 | 25 |
| #4 | 29 | 43 | 27 | 40 | 25 | 37 | 23 | 34 |
| #5 | 36 | 54 | 33 | 50 | 31 | 47 | 28 | 42 |
| #6 | 43 | 65 | 40 | 60 | 37 | 56 | 34 | 50 |

STRUCTURAL STEEL NOTES

- FABRICATION AND ERECTION OF STRUCTURAL STEEL MEMBERS IS TO BE IN ACCORDANCE WITH "AISC CODE OF STANDARD PRACTICE", LATEST EDITION.
- ANCHOR RODS TO BE ASTM F1554, GRADE 36 FULLY-THREADED RODS WITH PLATE WASHERS AND NUTS ON THE BOTTOM UNLESS NOTED OTHERWISE-SEE "TYPICAL ANCHOR BOLT" DETAIL.
- WELDING SHALL BE PERFORMED BY AWS QUALIFIED WELDERS IN CONFORMANCE WITH AWS D1.1, USING E70 SERIES ELECTRODES, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
- ALL STEEL SHALL BE SHOP PAINTED WITH A STANDARD ALKYD PRIMER (GRAY). FOR HARSH ENVIRONMENTS USE A GRAY ZINC ORGANIC OR INORGANIC PRIMER.
- STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS AND GRADES:
 - ANGLES, CHANNELS, PLATES, BARS, AND RODS = A36, f_y = 36ksi
- REFER TO "DEFERRED SUBMITTALS" FOR ADDITIONAL REQUIREMENTS.

PRE-FABRICATED COLD-FORMED STEEL TRUSS NOTES

- DESIGN REQUIREMENTS:
 - DESCRIPTION OF DESIGN CRITERIA.
 - ENGINEERING ANALYSIS DEPICTING MEMBER STRESSES AND OVERALL TRUSS DEFLECTION.
 - TRUSS MEMBER SIZES, THICKNESS, AND CONNECTIONS AT TRUSS JOINTS.
 - TRUSS SUPPORT REACTIONS.
 - TOP CHORD, BOTTOM CHORD, AND WEB BRACING REQUIREMENTS.
 - BLOCKING TRUSSES AS REQUIRED.
- PERFORMANCE REQUIREMENTS:
 - CALCULATE STRUCTURAL CHARACTERISTICS OF COLD-FORMED STEEL TRUSS MEMBERS ACCORDING TO AMERICAN IRON AND STEEL INSTITUTE "NORTH AMERICAN SPECIFICATIONS FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS", LATEST EDITION.
 - DESIGN, FABRICATE, AND ERECT COLD-FORMED STEEL TRUSSES TO WITHSTAND SPECIFIED DESIGN LOADS WITHIN LIMITS AND UNDER CONDITIONS REQUIRED PER TABLE.
- NO FIELD MODIFICATIONS OF TRUSSES ARE PERMITTED UNLESS FABRICATOR PROVIDES CALCULATIONS AND DRAWINGS DETAILING THE MODIFICATION. CALCULATIONS AND DRAWINGS SHALL BE SIGNED AND SEALED BY AN ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED.
- REFER TO "DEFERRED SUBMITTALS" FOR ADDITIONAL REQUIREMENTS.

PRE-FABRICATED COLD-FORMED STEEL TRUSSES - DESIGN CRITERIA TABLE

| | |
|--|---|
| TOP CHORD: | 20 psf LIVE LOAD 10 psf DEAD LOAD |
| BOTTOM CHORD: | 10 psf DEAD LOAD |
| WIND UPLIFT: | PER "DESIGN LOADS" ON THESE GENERAL NOTES |
| TRUSS SPACING: | PER PLAN |
| CAMBER: | 75 PERCENT OF DEAD LOAD |
| DEFLECTION LIMITS: | AS SHOWN BELOW |
| ROOF TRUSSES: | TOTAL LOAD = L/240 LIVE LOAD = L/360 |
| LOCAL DEFLECTION LIMITS BETWEEN PANEL POINTS | AS SHOWN BELOW |
| TOP CHORD TOTAL LOAD: | L/180 |
| TOP CHORD LIVE LOAD: | L/240 |
| BOTTOM CHORD TOTAL LOAD: | L/240 |
| BOTTOM CHORD LIVE LOAD: | L/360 |

CONCRETE NOTES

- ALL CONCRETE WORK INCLUDING FORMING, REINFORCING, MIXING, PLACING, AND CURING SHALL BE DONE IN ACCORDANCE WITH THE ACI MANUAL OF CONCRETE PRACTICE INCLUDING "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE", ACI 318, AND "SPECIFICATIONS FOR STRUCTURAL CONCRETE", ACI 301 LATEST EDITIONS.
- IT SHALL BE THE RESPONSIBILITY OF THE MIX DESIGN SUPPLIER TO PROPORTION MIXES APPROPRIATELY TO REACH THE REQUIRED DESIGN STRENGTH NOTED, AND SHALL BE APPROPRIATE FOR THEIR INTENDED USE. ADMIXTURES ARE OPTIONAL. HOWEVER, AIR-ENTRAINING ADMIXTURES SHALL BE USED FOR CONCRETE EXPOSED TO THE EXTERIOR OR FREEZE-THAW CYCLES.
- CONTRACTOR SHALL SUBMIT CONCRETE MIX DESIGNS FOR EACH INTENDED USE ON THE PROJECT FOR REVIEW AND APPROVAL BY THE ENGINEER OF RECORD. CONTENTS OF THE MIX DESIGN SHALL COMPLY WITH, AND INCLUDE ALL INFORMATION REQUIRED BY, ACI 318, CHAPTER 5 (FOR 2011 AND EARLIER CODE EDITIONS), & CHAPTER 26 (FOR 2014 CODE EDITION). THIS INCLUDES, BUT IS NOT LIMITED TO NUMBER OF TESTS AND AGE OF TESTS INCLUDED IN THE MIX DESIGN REPORT.
- ALL CONCRETE DENSITY SHALL BE NORMAL WEIGHT (145 pcf +/- 5) UNLESS OTHERWISE INDICATED.
- FLY ASH ALLOWANCES:
 - 20% MAXIMUM BY WEIGHT IN FOOTINGS
 - 15% MAXIMUM BY WEIGHT IN SLABS
- COORDINATE CONCRETE WORK WITH THAT OF OTHER TRADES TO ALLOW FOR SETTING OF SLEEVES, ACCESSORIES, ETC.
- ALL REINFORCING STEEL, ANCHOR RODS, DOWELS, AND INSETS SHALL BE WELL-SECURED IN POSITION PRIOR TO PLACING CONCRETE.
- TEST CYLINDERS WILL BE REQUIRED (4 MINIMUM FOR 6"x12"), AND RECORDS OF RESULTS SHALL BE SUBMITTED TO ENGINEER OF RECORD (1 AT 7 DAYS, 2 AT 28 DAYS, ONE SPARE). ALTERNATIVELY, PROVIDE 5 MINIMUM 4"x8" CYLINDERS (1 AT 7 DAYS, 3 AT 28 DAYS, ONE SPARE). SLUMP TESTS ARE RECOMMENDED.
- CONSTRUCTION JOINTS IN CONCRETE INDICATED WITH A ROUGH, CLEAN SURFACE SHALL HAVE A 1/4" AVERAGE AMPLITUDE.
- ALL COLD JOINTS SHALL BE ROUGHENED AND CLEANED PRIOR TO PLACING CONCRETE.
- ALL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH IN ACCORDANCE WITH THE FOLLOWING:
 - (A) TOTAL AIR CONTENT LIMITS INCLUDE BOTH ENTRAINED AND ENTRAPPED AIR +/- 1/2%. "N" IN COLUMN INDICATES THE ADDITION OF ENTRAINED AIR IS NOT REQUIRED, BUT IS PERMITTED.

CONCRETE TABLE

| INTENDED USE | MINIMUM 28 DAY STRENGTH f _c | MAX WATER-CEMENT RATIO | TOTAL AIR LIMITS (MAX % RATIO) (A) |
|--------------------------------------|--|------------------------|------------------------------------|
| INTERIOR SLAB ON GRADE | 4 ksi | 0.48 | 3 |
| FOOTINGS/FOUNDATION WALLS | 4 ksi | 0.48 | 6 (WHERE EXPOSED TO EXT.) |
| CONCRETE EXPOSED TO DE-ICERS | 4.5 ksi | 0.40 | 6 |
| ALL CONCRETE NOT OTHERWISE SPECIFIED | 4 ksi | 0.40 | 6 |

DEVELOPMENT LENGTH OF STANDARD HOOKS IN CONCRETE NOTES

- VALUES IN TABLE ARE BASED ON 60ksi REBAR. FOR OTHER REBAR YIELD STRENGTHS MULTIPLY VALUES IN THE TABLE BY THE SPECIFIED YIELD STRENGTH DIVIDED BY 60.
- SEE ACI 318 SECTION 12.5 FOR ALLOWABLE REDUCTIONS IN DEVELOPMENT LENGTH. IT SHALL NOT BE LESS THAN 8 BAR DIAMETERS OR 6 INCHES.
- VALUES IN THE TABLE SHALL BE MULTIPLIED BY 1.2 FOR EPOXY COATED BARS.
- VALUES IN THE TABLE SHALL BE MULTIPLIED BY 1.33 WHERE LIGHT WEIGHT CONCRETE IS USED.
- HOOKEED BARS ARE NOT CONSIDERED EFFECTIVE IN DEVELOPING BARS IN COMPRESSION.

DEVELOPMENT LENGTH OF STANDARD HOOKS IN CONCRETE - 60 KSI REBAR TABLE (INCHES)

| BAR SIZE | f _c = 3,000 psi | f _c = 3,500 psi | f _c = 4,000 psi | f _c = 5,000 psi |
|----------|----------------------------|----------------------------|----------------------------|----------------------------|
| #3 | 9 | 8 | 8 | 7 |
| #4 | 11 | 11 | 10 | 9 |
| #5 | 14 | 13 | 12 | 11 |
| #6 | 17 | 15 | 15 | 13 |

COMPRESSION LAP SPLICE LENGTH IN CONCRETE NOTES

- VALUES IN TABLE ARE BASED ON 60 ksi OR 80 ksi REBAR. THERE SHALL BE NO ADJUSTMENT PERMITTED FOR REBAR EXCEEDING 80 ksi IN YIELD STRENGTH.
- MULTIPLY VALUES IN TABLE BY 1.33 FOR f_c LESS THAN 3,000 psi.
- WHERE BARS OF DIFFERENT SIZES ARE SPLICED, PROVIDE THE LAP LENGTH OF THE LARGER BAR.
- VALUES IN THE TABLE CAN BE MULTIPLIED BY 0.75 WHERE LAP OCCURS WITHIN A SPIRAL IN A SPIRALLY REINFORCED COLUMN, BUT SHALL NOT BE LESS THAN 12".
- REBAR IN ALL CONCRETE MEMBERS SHALL BE SPLICED IN ACCORDANCE WITH THE "TENSION LAP SPLICE LENGTH" TABLE UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS.

COMPRESSION LAP SPLICE LENGTH IN CONCRETE f_c = 4,000 psi OR GREATER TABLE (INCHES)

| BAR SIZE | f _y = 60 ksi | f _y = 80 ksi |
|----------|-------------------------|-------------------------|
| #3 | 12 | 18 |
| #4 | 15 | 24 |
| #5 | 19 | 30 |
| #6 | 23 | 36 |

SPECIAL INSPECTIONS - CONCRETE TABLE

| ITEM | INSPECTION FREQUENCY | SCOPE |
|----------------------|----------------------|---|
| REINFORCEMENT | PERIODIC | VERIFY WELDABILITY OF REBAR OTHER THAN ASTM A 706; INSPECT SINGLE PASS FILLET WELDS NOT GREATER THAN 5/16" |
| REINFORCEMENT | CONTINUOUS | INSPECT ALL OTHER WELDS (SEE ALSO "STEEL" SPECIAL INSPECTIONS TABLE) |
| ANCHOR INSTALLATION | PERIODIC | INSPECT CAST-IN-PLACE ANCHORS AND BOLTS |
| ANCHOR INSTALLATION | PERIODIC | INSPECT POST-INSTALLED MECHANICAL AND ADHESIVE ANCHORS NOT OTHERWISE SPECIFIED |
| ANCHOR INSTALLATION | CONTINUOUS | INSPECT POST-INSTALLED ADHESIVE ANCHORS THAT RESIST SUSTAINED TENSION LOADS |
| ANCHOR INSTALLATION | CONTINUOUS | INSPECT POST-INSTALLED MECHANICAL AND ADHESIVE ANCHORS PER THE REQUIREMENTS IN THEIR RESPECTIVE ICC-ES REPORTS |
| MIX DESIGN | PERIODIC | VERIFY USE OF APPROVED MIX DESIGN PRIOR TO CONCRETE PLACEMENT, FABRICATE SPECIMENS FOR STRENGTH TESTING, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE TEMPERATURE OF THE CONCRETE |
| SAMPLING AND TESTING | CONTINUOUS | VERIFY STRENGTH OF CONCRETE PRIOR TO STRESSING TENDONS IN POST-TENSIONED CONCRETE, AND PRIOR TO REMOVAL OF SHORES |
| CONCRETE PLACEMENT | PERIODIC | INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF CONCRETE MEMBER BEING FORMED |
| CONCRETE PLACEMENT | PERIODIC | INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSIONS OF CONCRETE MEMBER BEING FORMED |
| CONCRETE PLACEMENT | CONTINUOUS | CONCRETE PLACEMENT |

SPECIAL INSPECTIONS - MASONRY - LEVEL 1 INSPECTION (LEVEL B QUALITY ASSURANCE) FOR OCCUPANCY CATEGORY I, II, III STRUCTURES

| ITEM | INSPECTION FREQUENCY | SCOPE |
|--|----------------------|---|
| REINFORCEMENT | PERIODIC | LAPPING AND SPACING OF REBAR; LOCATION, PLACEMENT, GRADE, SIZE, AND TYPE OF REINFORCEMENT AND CONNECTORS |
| REINFORCEMENT | CONTINUOUS | WELDING OF REINFORCING BARS |
| INSTALLATION OF MASONRY, GROUT, AND MORTAR | PERIODIC | CONSTRUCTION OF MORTAR JOINTS; SIZE AND LOCATION OF STRUCTURAL ELEMENTS; PROTECTION OF MASONRY IN COLD WEATHER (BELOW 40° F) OR HOT WEATHER (ABOVE 90° F); CLEAN GROUT SPACE |
| INSTALLATION OF MASONRY, GROUT, AND MORTAR | CONTINUOUS | GROUT PLACEMENT IN CELLS WITH STEEL REINFORCEMENT |
| MIXING OF MORTAR AND GROUT | PERIODIC | PROPORTIONS OF SITE-PREPARED MORTAR AND GROUT |
| ANCHORS | PERIODIC | INSPECT POST-INSTALLED MECHANICAL AND ADHESIVE ANCHORS PER THE REQUIREMENTS IN THEIR RESPECTIVE ICC-ES REPORTS |
| EVALUATION OF STRENGTH | CONTINUOUS | PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS; VERIFY f _m PRIOR TO CONSTRUCTION. A "SET" IS HEREBY DEFINED AS A MINIMUM OF 4 PRISM SPECIMENS. A MINIMUM OF 1 SET SHALL BE PREPARED AND TESTED FOR EACH DAY MASONRY IS INSTALLED. TEST 1 PRISM AT 7 DAYS, 2 AT 28 DAYS, AND THE 4th PRISM AT THE EOR'S DIRECTION, IF REQUIRED. REPORT ALL TEST RESULTS TO THE ARCHITECT AND EOR WITHIN 3 WORKING DAYS OF TESTING. |
| MISCELLANEOUS | PERIODIC | COMPLIANCE WITH REQUIRED INSPECTION PROVISIONS OF THE CONSTRUCTION DOCUMENTS AND THE APPROVED SUBMITTALS SHALL BE VERIFIED |

SPECIAL INSPECTIONS - SOILS AND FOUNDATIONS TABLE

| ITEM | INSPECTION FREQUENCY | SCOPE |
|-------|----------------------|--|
| SOILS | PERIODIC | VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY; VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL; PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS; PRIOR TO PLACEMENT OF COMPACTED FILL, INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY |
| SOILS | CONTINUOUS | VERIFY USE OF PROPER MATERIALS, DENSITIES, LIFT THICKNESSES, AND COMPACTION OF FILL; VERIFY MATERIALS AND PROCEDURES COMPLY WITH THE GEOTECHNICAL REPORT |

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