



- 3.03 DEBRIS
 - A. REMOVE DEBRIS, JUNK, AND TRASH FROM SITE.
- 3.04 WASTE REMOVAL
 - A. REMOVE FROM SITE ALL MATERIALS NOT TO BE REUSED ON SITE, DO NOT BURN OR BURY.
 - B. LEAVE SITE IN CLEAN CONDITION, READY FOR SUBSEQUENT WORK.
 - C. CLEAN UP SPILLAGE AND WIND-BLOWN DEBRIS FROM PUBLIC AND PRIVATE LANDS.

SECTION 03300

CAST-IN-PLACE CONCRETE

- 1.01 SUMMARY
 - A. THIS SECTION SPECIFIES CAST-IN-PLACE CONCRETE, INCLUDING FORMWORK REINFORCEMENT, CONCRETE MATERIALS, MIXTURE DESIGN, PLACEMENT PROCEDURES, AND FINISHES.

1.02 QUALITY ASSURANCE

- A. MANUFACTURER QUALIFICATIONS: A FIRM EXPERIENCED IN MANUFACTURING READY-MIXED CONCRETE PRODUCTS AND THAT COMPLIES WITH ASTM C 94C 94M REQUIREMENTS FOR PRODUCTION FACILITIES AND EQUIPMENT.

- 1. MANUFACTURER CERTIFIED ACCORDING TO NRMCA'S "CERTIFICATION OF READY MIXED CONCRETE PRODUCTION FACILITIES."

- B. ACI PUBLICATIONS: COMPLY WITH THE FOLLOWING UNLESS MODIFIED BY REQUIREMENTS IN THE CONTRACT DOCUMENTS:

- 1. ACI 301, "SPECIFICATION FOR STRUCTURAL CONCRETE," SECTIONS 1 THROUGH 5.
- 2. ACI 117, "SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS."

PART 2 PRODUCTS

2.01 STEEL REINFORCEMENT

- A. REINFORCING BARS: ASTM A 615/A 615M, GRADE 60, DEFORMED.
- B. PLAIN STEEL WELDED WIRE REINFORCEMENT: ASTM A 185, PLAIN, FABRICATED FROM AS-DRAWN STEEL, WIRE INTO FLAT SHEETS.
- C. BAR SUPPORTS: BOLSTERS, CHAIRS, SPACERS, AND TOHER DEVICES FOR SPACING, SUPPORTING, AND FASTENING REINFORCING BARS AND WELDED WIRE REINFORCEMENT IN PLACE. MANUFACTURE BAR SUPPORTS FROM STEEL WIRE, PLASTIC, OR PRECAST CONCRETE ACCORDING TO CRSI'S "MANUAL OF STANDARD PRACTICE."

2.02 CONCRETE MATERIALS

- A. CEMENTITIOUS MATERIAL: USE THE FOLLOWING CEMENTITIOUS MATERIALS, OF THE SAME TYPE, BRAND, AND SOURCE, THROUGHOUT PROJECT.
- 1. PORTLAND CEMENT: ASTM C 150, TYPE 1.
- 2. NORMAL-WEIGHT AGGREGATES: ASTM C 33, GRADED, 1-INCH (25-MM) NOMINAL MAXIMUM COARSE-AGGREGATE SIZE.
- 3. FINE AGGREGATE: FREE OF MATERIALS WITH DELETERIOUS REACTIVITY TO ALKALI IN CEMENT.
- C. WATER: ASTM C 94C 94M AND POTABLE.
- D. AIR-ENTRAINING ADMIXTURE: ASTM C 260.
- E. CHEMICAL ADMIXTURES: PROVIDE ADMIXTURES CERTIFIED BY MANUFACTURER TO BE COMPATIBLE WITH OTHER ADMIXTURES AND THAT WILL NOT CONTRIBUTE WATER-SOLUBLE CHLORIDE IONS EXCEEDING THOSE PERMITTED IN HARDENED CONCRETE. DO NOT USE CALCIUM CHLORIDE OR ADMIXTURES CONTAINING CALCIUM CHLORIDE.

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- 1. WATER-REDUCING ADMIXTURE: ASTM C 494C 494M, TYPE A.
- 2. RETARDING ADMIXTURE: ASTM C 494C 494M, TYPE B.
- 3. WATER-REDUCING AND RETARDING ADMIXTURE: ASTM C 494C 494M, TYPE D.
- 4. HIGH-RANGE, WATER-REDUCING ADMIXTURE: ASTM C 494C 494M, TYPE F.
- 5. HIGH-RANGE, WATER-REDUCING AND RETARDING ADMIXTURE: ASTM C 494C 494M, TYPE G.
- 6. PLASTICIZING AND RETARDING ADMIXTURE: ASTM C 1017C 1017M, TYPE 11.

2.03 VAPOR RETARDERS

- A. PLASTIC VAPOR RETARDER: ASTM E 1745, CLASS B. INCLUDE MANUFACTURER'S RECOMMENDED ADHESIVE OR PRESSURE-SENSITIVE TAPE.

2.04 CURING MATERIALS

- A. EVAPORATION RETARDER: WATERBORNE, MONOMOLECULAR FILM FORMING, MANUFACTURED FOR APPLICATION TO FRESH CONCRETE.
- B. ABSORPTIVE COVER: AASHTO M 182, CLASS 2, BURLAP CLOTH MADE FROM JUTE OR KENAF, WEIGHING APPROXIMATELY 9 OZ/SQ YRD. (305 OZ/SQ M) WHEN DRY.
- C. MOISTURE-RETAINING COVER: ASTM C 171, POLYETHYLENE FILM OR WHITE BURLAP-POLYETHYLENE SHEET.
- D. WATER: POTABLE.

2.05 RELATED MATERIALS

- A. EXPANSION- AND ISOLATION-JOINT-FILLER STRIPS: ASTM D 1751, ASPHALT-SATURATED CELLULOSE FIBER.

2.06 CONCRETE MIXTURES

- A. PREPARE DESIGN MIXTURES FOR EACH TYPE AND STRENGTH OF CONCRETE, PROPORTIONED ON THE BASIS OF LABORATORY TRIAL MIXTURE OR FIELD TEST DATA, OR BOTH, ACCORDING TO ACI 301.
- B. PROPORTION NORMAL-WEIGHT CONCRETE MIXTURE AS FOLLOWS:

- 1. MINIMUM COMPRESSIVE STRENGTH: 4000 PSI (27.6 MPa) AT 28 DAYS.
- 2. MAXIMUM WATER-CEMENTITIOUS MATERIALS RATIO: 0.45.
- 3. SLUMP LIMIT: 5 INCHES (125 MM), PLUS OR MINUS 1 INCH (25 MM).
- 4. AIR CONTENT: 5 PERCENT, PLUS OR MINUS 1.5 PERCENT AT POINT OF DELIVERY FOR 1-INCH (25-MM) NOMINAL MAXIMUM AGGREGATE SIZE.
- 5. AIR CONTENT: DO NOT ALLOW AIR CONTENT OF TROWELED FINISHED FLOORS TO EXCEED 3 PERCENT.

PART 3 EXECUTION

3.01 FORMWORK

- A. DESIGN, ERECT, SHORE, BRACE, AND MAINTAIN FORMWORK ACCORDING TO ACI 301 TO SUPPORT VERTICAL, LATERAL, STATIC, AND DYNAMIC LOADS AND CONSTRUCTION LOADS THAT MIGHT BE APPLIED, UNTIL STRUCTURE CAN SUPPORT SUCH LOADS.

3.02 STEEL REINFORCEMENT

- A. GENERAL: COMPLY WITH CRSI'S "MANUAL OF STANDARD PRACTICE" FOR PLACING REINFORCEMENT.
- 1. DO NOT CUT OR PUNCTURE VAPOR RETARDER. REPAIR DAMAGE AND RESEAL VAPOR RETARDER BEFORE PLACING CONCRETE.

3.03 JOINTS

- A. GENERAL: CONSTRUCT JOINTS TRUE TO LINE WITH FACES PERPENDICULAR TO SURFACE PLAN OF CONCRETE.
- B. CONSTRUCTION JOINTS: INSTALL SO STRENGTH AND APPEARANCE OF CONCRETE ARE NOT IMPAIRED, AT LOCATIONS INDICATED OR AS APPROVED BY ARCHITECT.
- C. CONTRACTION JOINTS IN SLABS ON-GRADE: FORM WEAKENED-PLANE CONTRACTION JOINTS, SECTIONING CONCRETE INTO AREAS AS INDICATED. CONSTRUCT CONTRACTION JOINTS FOR A DEPTH EQUAL TO AT LEAST ONE-FOURTH OF CONCRETE THICKNESS AS FOLLOWS:

- 1. GROOVED JOINTS: FORM CONTRACTION JOINTS AFTER INITIAL FLOATING BY GROOVING AND FINISHING EDGE OF JOINT TO A RADIUS OF 18 INCH (30 MM). REPEAT GROOVING OF CONTRACTION JOINTS AFTER APPLYING SURFACE FINISHES. ELIMINATE GROOVE TOOL MARKS ON CONCRETE SURFACES.
- 2. SAWED JOINTS: FORM CONTRACTION JOINTS WITH POWER SAWS EQUIPPED WITH SHATTERPROOF ABRASIVE OR DIAMOND-RIMMED BLADES. CUT 1/8-INCH-(3.2-MM) WIDE JOINTS INTO CONCRETE WHEN CUTTING ACTION WILL NOT TEAR, ABRADE, OR OTHERWISE DAMAGE SURFACE AND BEFORE CONCRETE DEVELOPS RANDOM CONTRACTION CRACKS.
- D. ISOLATION JOINTS IN SLABS ON-GRADE: AFTER REMOVING FORMWORK, INSTALL JOINT-FILLER STRIPS AT SLAB JUNCTIONS WITH VERTICAL SURFACES, SUCH AS COLUMN PEDESTALS, FOUNDATION WALLS, GRADE BEAMS AND OTHER LOCATIONS AS INDICATED.

3.04 CONCRETE PLACEMENT

- A. BEFORE PLACING CONCRETE, VERIFY THAT INSTALLATION OF FORMWORK REINFORCEMENT, AND EMBEDDED ITEMS IS COMPLETE AND THAT REQUIRED INSPECTIONS HAVE BEEN PERFORMED.
- 1. DEPOSIT CONCRETE CONTINUOUSLY IN ONE LAYER.
- B. PLACE CONCRETE OVER COMPACTED SUB-GRADE, MINIMUM 95% DENSITY PER ASTM D 1557. SUBMIT TEST REPORT TO OWNER.

3.05 FINISHING FLOORS AND SLABS

- A. GENERAL: COMPLY WITH ACI 302.1R RECOMMENDATIONS FOR SCREEDING, RESTRAIGHTENING, AND FINISHING OPERATIONS FOR CONCRETE SURFACES. DO NOT WET CONCRETE SURFACES.
- B. FLOAT FINISH: CONSOLIDATE SURFACE WITH POWER-DRIVEN FLOATS OR BY HAND FLOATING IF AREA IS SMALL OR INACCESSIBLE TO POWER-DRIVEN FLOATS. RESTRAIGHTEN, CUT DOWN HIGH SPOTS, AND FILL LOW SPOTS. REPEAT FLOAT PASSES AND RESTRAIGHTENING UNTIL SURFACE IS LEFT WITH A UNIFORM, SMOOTH, GRANULAR TEXTURE.
- C. TROWEL FINISH: AFTER APPLYING FLOAT FINISH, APPLY FIRST TROWELING AND CONSOLIDATE CONCRETE BY HAND OR POWER-DRIVEN TROWEL. CONTINUE TROWELING PASSES AND RESTRAIGHTEN UNTIL SURFACE IS FREE OF TROWEL MARKS AND UNIFORM IN TEXTURE AND APPEARANCE. GRIND SMOOTH ANY SURFACE DEFECTS THAT WOULD TELEGRAPH THROUGH APPLIED COATINGS OR FLOOR COVERINGS.
- D. BROOM FINISH: APPLY A BROOM FINISH TO EXTERIOR CONCRETE PLATFORMS, STEPS, AND RAMPS, AND ELSEWHERE AS INDICATED.

3.06 CONCRETE PROTECTING AND CURING

- A. GENERAL: PROTECT FRESHLY PLACED CONCRETE FROM PREMATURE DRYING AND EXCESSIVE COLD OR HOT TEMPERATURES. COMPLY WITH ACI 306.1 FOR COLD-WEATHER PROTECTION AND ACI 301 FOR HOT-WEATHER PROTECTION DURING CURING.

SECTION 04730

MANUFACTURED STONE VENEER

PART 1 GENERAL

- 1.01 SECTION INCLUDES
 - A. MANUFACTURED STONE VENEER.
 - B. SPECIAL DECORATIVE VENEER STONE SHAPES FOR TRIM.

1.02 SUBMITTALS

- A. SUBMIT UNDER PROVISIONS OF SECTION 01300.
- B. VERIFICATION SAMPLES: FOR EACH FINISH PRODUCT SPECIFIED, TWO SAMPLES, MINIMUM SIZE 6 INCHES SQUARE, REPRESENTING ACTUAL PRODUCT, COLOR, AND PATTERNS AND SHOWING COLOR RANGE OF MATERIAL.
- C. MANUFACTURER'S CERTIFICATES: CERTIFY PRODUCTS MEET OR EXCEED SPECIFIED REQUIREMENTS.

1.03 QUALIFICATIONS

- 1. COMPANY SPECIALIZING IN MANUFACTURING PRODUCTS SPECIFIED IN THIS SECTION WITH MINIMUM FIVE YEARS DOCUMENTED EXPERIENCE.
- B. INSTALLER: COMPANY WITH DOCUMENTED EXPERIENCE IN PERFORMING WORK OF THIS SECTION.

1.04 QUALITY ASSURANCE

- A. ICB0 EVALUATION SERVICE - EVALUATION REPORT.
- 1.05 DELIVERY, STORAGE, AND HANDLING
 - A. STORE PRODUCTS ON PALLETS IN MANUFACTURER'S UNOPENED PACKAGING UNTIL READY FOR INSTALLATION.
 - B. STORE MANUFACTURED STONE MATERIALS ON PALLETS ON A DRY LEVEL SURFACE. WATER-SOLUBLE CHLORIDE IONS EXCEEDING THOSE PERMITTED IN HARDENED CONCRETE. DO NOT USE CALCIUM CHLORIDE OR ADMIXTURES CONTAINING CALCIUM CHLORIDE.

1.06 PROTECT CONDITIONS

- A. HOT AND COLD WEATHER REQUIREMENTS: IN ACCORDANCE WITH ACI 530.1/ASCE 6/MS 602 SPECIFICATIONS FOR MASONRY STRUCTURES.
- B. AMBIENT TEMPERATURE SHALL BE 40 DEGREES F OR ABOVE DURING ERECTION OF STONE MASONRY. WHEN AMBIENT TEMPERATURE FALLS BELOW 50 DEGREES F, MORTAR MIXING WATER SHALL BE HEATED.

1.07 WARRANTY

- A. MANUFACTURER'S STANDARD 50 YEAR WARRANTY FROM DATE OF SUBSTANTIAL COMPLETION. WARRANTY INCLUDES COVERAGE AGAINST DEFECTS IN MATERIALS WHEN INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.

1.08 EXTRA MATERIALS

- A. FURNISH EXTRA MANUFACTURED STONE MATERIAL IN A VARIETY OF SHAPES AND SIZES IN QUANTITIES EQUAL TO THREE PERCENT OF THE INSTALLED STONE.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- ACCEPTABLE MANUFACTURER: AS SPECIFIED ON DRAWINGS

2.02 ACCESSORIES

- A. EXPANDED METAL LATH PAPER BACKED: ASTM C 847, GALVANIZED, SELF-FURRING MESH OF WEIGHT TO SUIT APPLICATION; BACKED WITH PAPER.
- B. EXPANDED METAL LATH: ASTM C 847, GALVANIZED, SELF-FURRING, MINIMUM 2.5 LB OR 18 GAUGE.
- C. ANCHORAGE: THE WIRE, NAILS SCREWS AND OTHER METAL SUPPORTS, GALVANIZED, OF TYPE AND SIZE TO SUIT APPLICATION AND TO RIGIDLY SECURE MATERIALS IN PLACE.
- D. BUILDING PAPER: ASTM D 226, TYPE 1, NO. 15 NON-PERFORATED ASPHALT SATURATED FELT.

2.03 MORTAR

- A. MASONRY CEMENT: COMPLYING WITH ASTM C 91, TYPES.
- B. MASONRY CEMENT: POLYMER MODIFIED (LATEX) COMPLYING WITH ANSI A 118.4.
- C. WATER: CLEAN AND POTABLE.

2.04 MIXES

- A. MORTAR MIXES:
 - 1. MIX MORTAR INGREDIENTS IN ACCORDANCE WITH ASTM C 270, MIX ONLY IN QUANTITIES NEEDED FOR IMMEDIATE USE.
 - 2. DO NOT USE ANTI-FREEZE COMPOUNDS TO LOWER FREEZING POINT OF MORTAR.

PART 3 EXECUTION

3.01 EXAMINATION

- A. DO NOT BEGIN INSTALLATION UNTIL SUBSTRATES HAVE BEEN PROPERLY PREPARED.
- B. EXAMINE SUBSTRATES UPON WHICH MANUFACTURED STONE VENEER WILL BE INSTALLED.
- C. DO NOT BEGIN INSTALLATION UNTIL BACKING STRUCTURE IS PLUMB, BEARING SURFACES ARE LEVEL AND SUBSTRATES ARE CLEAN AND PROPERLY PREPARED.
- D. VERIFY THAT BUILT-IN ITEMS ARE IN PROPER LOCATION, AND READY FOR ROUGHING OUT.
- E. IF SUBSTRATE PREPARATION IS THE RESPONSIBILITY OF ANOTHER INSTALLER, NOTIFY THE CONSTRUCTION MANAGER OF UNSATISFACTORY PREPARATION BEFORE PROCEEDING.

3.02 PREPARATION FOR INSTALLATION OVER PLYWOOD SHEATHING

- A. COVER SHEATHING WITH MOISTURE BARRIER WITH ALL JOINTS LAPPED SHINGLE STYLE.
- B. MINIMUM 1/2 INCHES. LAP VERTICAL JOINTS A MINIMUM OF 6 INCHES.
- C. INSTALL METAL LATH WITH WOOD STUDS USING GALVANIZED NAILS OR STAPLES AT MAXIMUM 6 INCHES ON CENTER VERTICALLY AND 16 INCHES CENTER HORIZONTALLY. FASTEN WITH A MINIMUM OF A 1 INCH PENETRATION OF THE WOOD STUDS. OVERLAP LATH AT INSIDE AND OUTSIDE CORNERS 16 INCHES.

3.03 SCRATCH COAT INSTALLATION

- A. APPLY SCRATCH COAT IN ACCORDANCE WITH PCA PLASTER (STUCCO) MANUAL.
- B. APPLY SCRATCH COAT TO NOMINAL THICKNESS OF 3/8 TO 1/2 INCH OVER METAL LATH SURFACES.
- C. MOIST CURE SCRATCH COAT FOR MINIMUM PERIOD OF 48 HOURS.
- D. AFTER CURING, DAMPEN PREVIOUS COAT PRIOR TO APPLYING MORTAR AND THIN STONE VENEER.

3.05 PREPARATION FOR INSTALLATION OF THIN VENEER STONE

- A. COORDINATE PLACEMENT OF REINFORCEMENT, ANCHORS AND ACCESSORIES WITH POWER, PLUMBING DECORATIVE ITEMS PROVIDED BY OTHER SECTIONS.
- B. CLEAN ALL BUILT-IN ITEMS OF MATTER BEFORE INCORPORATING INTO THE WALL. ALL FERROUS METAL BUILT INTO THE WALL SHALL BE PRIMED OR GALVANIZED.
- C. IF REQUIRED, PROVIDE TEMPORARY BRACING DURING INSTALLATION OF MASONRY WORK. MAINTAIN BRACING IN PLACE UNTIL BUILDING STRUCTURE PROVIDES PERMANENT SUPPORT.

3.06 INSTALLATION

- A. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- B. INSTALL MANUFACTURED VENEER STONE AND MORTAR IN ACCORDANCE WITH ACI 530.1/ASCE 6/MS 602 SPECIFICATIONS FOR MASONRY STRUCTURES.
- C. MAINTAIN MASONRY COURSES TO UNIFORM DIMENSIONS, FORM VERTICAL AND HORIZONTAL JOINTS OF UNIFORM THICKNESS. (DRY STACKED)
- D. PATTERN BOND:
 - 1. LAY STONE WITH THE FINISHED FACE EXPOSED. IF A COLOR BLEND IS BEING USED, TAKE CARE TO AVOID A CONCENTRATION OF ANY ONE COLOR TO ANY ONE WALL SURFACE.
 - 2. MAINTAIN AN APPROXIMATE 3/8 INCH DRY JOINT, AS STONE ALLOWS.
 - 3. DO NOT USE STACKED VERTICAL JOINTS.
 - 4. LAY OUT WORK IN ADVANCE AND DISTRIBUTE COLOR RANGE OF STONE UNIFORMLY OVER TOTAL WORK AREA.
- E. PLACING AND BONDING:
 - 1. DAMPEN SUBSTRATE AS REQUIRED TO REDUCE EXCESSIVE SUCTON.
 - 2. APPLY MORTAR IN ACCORDANCE WITH PCA PLASTER (STUCCO) MANUAL TO A THICKNESS OF 3/8 TO 1/2 INCH. DO NOT SPREAD MORE THAN A WORKABLE AREA OF 5 TO 10 SF SO THAT MORTAR WILL NOT SET BEFORE STONE IS APPLIED.
 - 3. LAY MANUFACTURED VENEER STONE IN A FULL BED OF MORTAR WITH FULL JOINTS.
 - 4. WORK FROM THE BOTTOM UP LAYING CORNER PIECES FIRST.
 - 5. REMOVE EXCESSIVE MORTAR AS WORK PROGRESSES.
 - 6. DO NOT SHIFT OR TAP MANUFACTURED VENEER STONE AFTER MORTAR HAS ACHIEVED INITIAL SET. WHERE ADJUSTMENT IS REQUIRED, REMOVE MORTAR AND REPLACE.
 - 7. ISOLATE TOP OF MANUFACTURED VENEER STONE FROM HORIZONTAL STRUCTURAL FRAMING MEMBERS AND SLABS OR DECKS WITH COMPRESSIBLE JOINT FILLER AND SEALANT IN ACCORDANCE WITH SECTION 07000.
- F. JOINTING WORK: WHERE FRESH MASONRY JOINTS PARTIALLY SET MASONRY:
 - 1. REMOVE LOOSE STONE AND MORTAR.
 - 2. CLEAN AND LIGHTLY WET SURFACE OF WET SURFACE OF SET MASONRY.
 - 3. TO AVOID A HORIZONTAL RUN OF MASONRY RACK BACK 1/2 THE LENGTH OF STONE IN EACH COURSE.
 - 4. TOOTHING IS NOT PERMITTED.

3.07 PROTECTION

- A. PRETECT INSTALLED PRODUCTS UNTIL COMPLETION OF PROJECT.
- B. COVER THE TOP OF UNFINISHED STONE MASONRY WORK TO PROTECT IT FROM THE WEATHER.
- C. EXTEND COVER A MINIMUM OF 24 INCHES DOWN BOTH SIDES AND HOLD SECURELY IN PLACE.
- D. PREVENT STAINING OF STONE FROM MORTAR, GROUT, SEALANTS, AND OTHER SURCES. IMMEDIATELY REMOVE SUCH MATERIALS FROM STONE WITHOUT DAMAGE TO THE STONEWORK.
- E. PROTECT SILLS, LEDGES AND PROJECTIONS FROM DROPPINGS OF MORTAR AND SEALANTS.
- F. TOUCH-UP, REPAIR OR REPLACE DAMAGED PRODUCTS BEFORE SUBSTANTIAL COMPLETION.

3.08 CLEANING

- A. KEEP THE FACE OF STONE FREE OF MORTAR AS THE WORK PROGRESSES. IF RESIDUAL MORTAR IS ON THE FACE OF THE STONE, ALLOW TO DRY PARTIALLY AND BRUSH THE MORTAR OFF THE SURFACE AND SPOGE OFF THE RESIDUE.
- B. WHEN THE WORK IS COMPLETED AND THE MORTAR HAS SET FOR 2 TO 3 DAYS THE SURFACE MAY BE CLEANED FROM TOP TO BOTTOM USING A MILD MASONRY DETERGENT ACCEPTABLE TO THE STONE MANUFACTURER. DO NOT USE METAL BRUSHES OR ACIDS FOR CLEANING.

END OF SECTION 04730

SECTION 05120

STRUCTURAL STEEL

PART 1 GENERAL

- 1.01 STEEL DETAILING, FABRICATION, AND ERECTION SHALL CONFORM TO THE LATEST AISC SPECIFICATIONS AND CODE OF STANDARD PRACTICE, THE AWS STRUCTURAL WELDING CODE, AND THE STEEL DECK INSTITUTE SPECIFICATION.
- 1.02 SHOP DRAWINGS ARE REQUIRED AND SHALL NOTE TYPE OF ELECTRODES, SIZE OF ALL WELDS, AND TYPE AND SIZE OF ALL BOLTS. SHOP DRAWINGS SHALL BE PREPARED UNDER THE SUPERVISION OF A REGISTERED PROFESSIONAL ENGINEER.
- 1.03 ALL SHOP AND FIELD WELDING SHALL BE DONE BY A CURRENTLY CERTIFIED WELDER.
- 1.04 ALL WELDING AND HIGH STRENGTH BOLTING MUST BE INSPECTED BY A QUALIFIED TESTING LABORATORY. LABORATORY SHALL BE APPROVED BY THE ARCHITECT AND/OR ENGINEER.

PART 2 PRODUCTS

2.01 STRUCTURAL STEEL SHALL BE:

- ASTM A36 - FOR PLATES, BAR, ROD.
- ASTM A992 - GRADE 50 - FOR WIDE FLANGE SLOPES.
- 2.02 BOLTS SHALL BE ASTM 325 TYPE 1.
- 2.03 WELDING ELECTRODES SHALL BE E70XX EXCEPT WHERE OTHER ELECTRODES ARE REQUIRED FOR COMPATIBILITY WITH MATERIAL BEING WELDED.
- 2.04 PAINT - FABRICATORS STANDARD RUST INHIBITIVE PAINT.

PART 3 EXECUTION

- 3.01 DO NOT WELD TO EXISTING STEEL WITHOUT WRITTEN APPROVAL FROM THE ENGINEER.
- 3.02 MISCELLANEOUS HANGING LOADS SUCH AS STAIR, STRINGERS, PIPES, MECHANICAL UNITS, ETC. SUPPORTED BY STEEL MEMBERS SHALL HAVE THESE LOADS APPLIED IN SUCH A MANNER SO THAT NO TORSIONAL FORCES ARE INDUCED IN THESE MEMBERS. I.E. LOADS SHALL PASS THROUGH THE CENTERLINE OF WIDE FLANGE SECTIONS THROUGH THE SHEAR CENTER OF CHANNELS.
- 3.03 CONNECTIONS WELDED OR HIGH STRENGTH BOLTED. USE STANDARD HOLES WITH THE FOLLOWING EXCEPTIONS: OVERSIZE HOLES ARE PERMITTED WHEN BOLTS ARE LOADED IN TENSION; SHORT BOLTED HOLES ARE PERMITTED FOR SHEAR LOADING PERPENDICULAR TO THE SLOOT.
- 3.04 ALL SLIP CONNECTIONS SHALL BE PROVIDED WITH A MEANS OF PREVENTING THE NUTS FROM UNTHREADING.
- 3.05 ALL METAL DECKS SHALL BE SECURELY FASTENED (WELDED, SCREWED, OR POWER-ACTUATED PINNED) TO STEEL SUPPORTS IN ACCORDANCE WITH THE SPECIFICATION OF THE STEEL DECK INSTITTUTE.

3.06 PAINTING

- A. PROVIDE ONE SHOP COAT AND ONE FIELD COAT OF RUST-INHIBITIVE PAINT.
- B. DO NOT PAINT BEAM OR CHASE THAT ARE ENCASED IN CONCRETE OR TO RECEIVE SPRAYED-ON FIREPROOFING.
- C. OMT POINT AT AREAS TO BE WELDED.

3.07 BEAMS BEARING ON MASONRY SHALL BE FIELD WELDED TO BEARING PLATE.

3.08 INSPECTION

- A. WELDED CONNECTION SHALL BE VISUALLY INSPECTED BY AN AWS CERTIFIED WELDING INSPECTOR.
- B. BOLTED CONNECTIONS SHALL BE VISUALLY INSPECTED BY THE TORQUE WRENCH METHOD BY INSPECTOR. TEST SHALL BE PER AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A 325 OR A-490 BOLTS.

END OF SECTION 05120

SECTION 05400

COLD-FORMED METAL FRAMING

PART 1 GENERAL

- 1.01 SUMMARY
 - E. WORK OF THIS SECTION INCLUDES, BUT IS NOT LIMITED TO THE DESIGN, FABRICATION AND ERECTION OF LIGHT GAUGE STEEL FRAMING AND ACCESSORIES NECESSARY TO PROVIDE A COMPLETE INSTALLATION.

1.02 PERFORMANCE REQUIREMENTS

- A. STRUCTURAL PERFORMANCE: PROVIDE COLD-FORMED METAL FRAMING CAPABLE OF WITHSTANDING DESIGN LOADS WITHIN LIMITS AND UNDER CONDITIONS INDICATED ON THE DRAWINGS.

1.03 QUALITY ASSURANCE

- A. INSTALLER QUALIFICATIONS: AN EXPERIENCED INSTALLER WHO HAS COMPLETED COLD-FORMED METAL FRAMING SIMILAR IN MATERIALS, DESIGN, AND EXTEND TO THAT INDICATED FOR THIS PROJECT AND WHO'S WORK HAS RESULTED IN CONSTRUCTION WITH A RECORD OF SUCCESSFUL IN-SERVICE PERFORMANCE.

B. COMPONENT DESIGN: COMPUTE STRUCTURAL PROPERTIES OF LIGHT GAGE STEEL FRAMING IN ACCORDANCE WITH AISC'S "SPECIFICATION FOR DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS."

C. WELDING: USE QUALIFIED WELDERS AND COMPLY WITH AMERICAN WELDING SOCIETY (AWS) D1.3, "STRUCTURAL WELDING CODE-SHEET STEEL."

1.04 DELIVERY AND STORAGE

- A. PROTECT STEEL FRAMING UNITS FROM RUSTING AND DAMAGE. DELIVER TO PROJECT SITE IN MANUFACTURER'S UNOPENED CONTAINERS OR BUNDLES, FULLY IDENTIFIED WITH NAME, BRAND, TYPE AND GRADE. STORE OFF GROUND IN A DRY VENTILATED SPACE OR PROTECT WITH SUITABLE WATERPROOF COVERINGS.

PART 2 PRODUCTS

2.01 STEEL FRAMING

- A. SYSTEM COMPONENTS: WITH EACH TYPE OF STEEL FRAMING REQUIRED, PROVIDE MANUFACTURER'S STANDARD STEEL RUNNERS (TRACKS), BLOCKING, BRIDGING, LINTELS, CLIP ANGLES, SHOES, REINFORCEMENTS, FASTENERS, AND ACCESSORIES AS RECOMMENDED BY MANUFACTURER FOR APPLICATIONS INDICATED, AS NEEDED TO PROVIDE A COMPLETE STEEL FRAMING SYSTEM.

B. MATERIALS

- 1. ALL 16 GAUGE AND HEAVIER UNITS SHALL BE STEEL FRAMING COMPONENTS OF GALVANIZED STRUCTURAL QUALITY STEEL SHEET, CONFORMING TO ASTM A446, WITH A MINIMUM YIELD POINT OF 60,000 PSI.
- 2. ALL 18 GAUGE AND LIGHTER UNITS SHALL BE STEEL FRAMING COMPONENTS OF GALVANIZED COMMERCIAL QUALITY STEEL SHEET, CONFORMING TO ASTM A446, WITH A MINIMUM YIELD POINT OF 53,000 PSI.
- 3. ACCESSORIES SHALL BE GALVANIZED STEEL OF THE SIZE AND GAUGE INDICATED ON THE DRAWINGS. WHERE SIZE AND GAUGE OF ACCESSORIES ARE NOT INDICATED, THEY SHALL BE OF THE MANUFACTURER'S STANDARD GALVANIZED MATERIAL.
- 4. WELDING ELECTRODES SHALL COMPLY WITH AWS CODE.

C. FINISHES

- 1. GALVANIZED FINISH
- 2. PROVIDE GALVANIZED FINISH TO METAL