DIVISION 03 - CONCRETE

030013 – CONCRETE

1. GENERAL
   A. SECTION INCLUDES:
      1) CAST-IN-PLACE CONCRETE INCLUDING REINFORCING, ACCESSORIES, AND FORMWORK
   B. QUALITY ASSURANCE:
      1) PERFORM WORK IN ACCORDANCE WITH ACI 301, UNLESS INDICATED OR SPECIFIED OTHERWISE.
      2) SUBMIT PROPOSED MIX DESIGN OF EACH CLASS OF CONCRETE TO APPOINTED FIRM FOR REVIEW PRIOR TO COMMENCEMENT OF WORK.
      A. CONCRETE WORK IS SUBJECT TO SPECIAL TESTING AND INSPECTION. NOTIFY ARCHITECT AT LEAST 48 HOURS BEFORE CONCRETE IS POURED.
2. PRODUCTS
   A. FORM MATERIALS:
      1) UNLESS SPECIFIED OTHERWISE, CONFORM TO ACI 301.
      2) PLYWOOD:
         A) APA RATED MEDIUM DENSITY OVERLAY, PLYFORM CLASS 1. EXT.
         B) APA B-B PLYFORM CLASS 1, EXT.
      3) FORM TIES: SNAP-OFF METAL; CONE ENDS.
      4) CHAMFERS AND RUSTICATION STRIPS: WOOD OR PLASTIC; FABRICATE TO THE SHAPES INDICATED.
      5) FOAM FILLER:
         A) FOAM-CONTROL EPS GEOFOAM: ASTM D6817; TYPE EPS12.
         B) THICKNESSES AS APPROPRIATE TO THE INSTALLATION REQUIREMENTS.
         C) SUPPLIER: ACH FOAM TECHNOLOGIES, LLC (MURRAY, UT; 877-775-8847).
   B. CONCRETE MATERIALS:
      1) UNLESS SPECIFIED OTHERWISE, CONFORM TO ACI 301.
      2) CONCRETE MATERIALS:
         A) CEMENT: ASTM C150, NORMAL - TYPE 1 PORTLAND CEMENT; GREY COLOR.
         B) NORMAL WEIGHT FINE AND COARSE AGGREGATES: ASTM C33; SEVERE WEATHER EXPOSURE.
      3) REINFORCING STEEL: ASTM C615, GRADE 60.
      4) CHAIRS, BOLSTERS, BAR SUPPORTS, AND SPACERS: PLASTIC; SIZED AND SHAPED FOR STRENGTH AND SUPPORT OF REINFORCEMENT DURING INSTALLATION AND PLACEMENT OF CONCRETE.
      5) WATER: CLEAN AND NOT DETRIMENTAL TO CONCRETE.
      6) ADMIXTURES
         A) AIR-ENTRAINMENT: ASTM C 260.
         B) WATER REDUCER NORMAL: ASTM C 494, TYPE A.
         C) ACCELERATOR: ASTM C 494, TYPE C OR E, NON-CORROSIVE, NON-CHLORIDE.
      7) 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 TO EXTEND PLASTICITY TIME, AND REDUCE WATER 20 TO 30 PERCENT.
      8) ACCESSORIES:
         A) FORM RELEASE AGENT: THAT WILL NOT BOND WITH, STAIN OR ADVERSELY AFFECT CONCRETE SURFACES, AND WILL NOT IMPAIR SUBSEQUENT TREATMENTS OF CONCRETE SURFACES WHEN APPLIED TO MOST FORMS OR FORM LINERS.
         B) 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) CURING COMPOUND: ASTM C309; MOISTURE LOSS NOT MORE THAN 0.055 GR./SQ.CM. WHEN APPLIED IN A SINGLE COAT MANUFACTURERS RECOMMENDED RATE.
   C. CONCRETE MIX:
      1) MIX CONCRETE IN ACCORDANCE WITH ASTM C94, AND IN ACCORDANCE WITH THE REQUIREMENTS INDICATED ON THE STRUCTURAL DRAWINGS.
      2) ALL CONCRETE SHALL CONTAIN THE SPECIFIED WATER REDUCING OR HIGH RANGE WATER-REDUCING ADMIXTURE.
      3) ALL CONCRETE REQUIRED TO BE AIR ENTRAINED SHALL CONTAIN AIR-ENTRAINING ADMIXTURE TO PRODUCE 4% TO 6% AIR.
3. EXECUTION
   A. FORMWORK:
      1) PLACE AS INDICATED AND AS NECESSARY TO RETAIN CAST-IN-PLACE CONCRETE.
   B. REINFORCEMENT:
      1) FABRICATE AS INDICATED AND IN ACCORDANCE WITH ACI 315.
      2) PLACE, SUPPORT, AND SECURE REINFORCEMENT AGAINST DISPLACEMENT.
      3) LOCATE REINFORCING SPLICES NOT INDICATED ON THE DRAWINGS AT POINTS OF MINIMUM STRESS.
   C. PLACEMENT
      1) MIX CONCRETE IN ACCORDANCE WITH ASTM C94; MINIMUM 3000 PSI, 28 DAY COMPRESSIVE STRENGTH.
      2) PLACEMENT AND FINISHING:
         A) PLACE IN ACCORDANCE WITH ACI 301.
         B) SMOOTH-FORMED FINISH: PROVIDE A SMOOTH-FORMED FINISH ON FORMED CONCRETE SURFACES EXPOSED TO VIEW. THIS IS AN AS-CAST CONCRETE SURFACE OBTAINED WITH SELECTED FORM-FACING MATERIAL, ARRANGED IN AN ORDERLY AND SYMMETRICAL MANNER WITH A MINIMUM OF SEAMS. REPAIR AND PATCH DEFECTIVE AREAS WITH FINS AND OTHER PROJECTIONS COMPLETELY REMOVED AND SMOOTHED.
         C) LIGHT STEEL TROWEL FINISH INTERIOR FLOOR SLAB SURFACES TO MATCH EXISTING ADJACENT FINISH.
      3) CURING: MOISTURE CURE ALL CONCRETE FOR A MINIMUM OF 7 DAYS.

035416 - HYDRAULIC CEMENT UNDERLAYMENT

1. GENERAL
   A. SECTION INCLUDES:
      1) LEVELING OF EXISTING CAST-IN-PLACE CONCRETE SLABS.
      2) RAMPS AND TAPERS AS NECESSARY TO CORRECT LEVELS BETWEEN DISSIMILAR FINISHES.
   B. SUBMITTALS: MANUFACTURER'S PRODUCT DATA AND INSTALLATION INSTRUCTIONS.
2. PRODUCTS
   A. SELF LEVELING UNDERLAYMENT SYSTEM: SELF-LEVELING, POURABLE, CEMENT BASED MATERIAL, MINIMUM 28 DAY COMPRESSIVE STRENGTH 3,000 PSI; MINIMUM BOND STRENGTH 200 PSI; ONE OF THE FOLLOWING.
      1) MAPEI CORPORATION "ULTRAPLAN 1 PLUS".
      2) ARDEX INC. "K-15" SELF-LEVELING UNDERLAYMENT CONCRETE.
      3) KOESTER AMERICAN CORPORATION "VAP-1 LEVEL PRO."
      4) SUPERCAP (HASLET TX; 866-704-2247) "SUPERCAP SELF-LEVELING UNDERLAYMENT."
      5) PROSPEC "LEVEL SET 300."
      6) LATICRETE INTERNATIONAL INC. "LATICRETE 86 LATILEVEL THIN POUR UNDERLAYMENT."
   B. TROWELABLE UNDERLAYMENT SYSTEM: AS RECOMMENDED BY MANUFACTURER FOR CONDITIONS:
      1) MAPEI CORPORATION "MAPACEM 100" OR "PLANITOP 10".
      2) ARDEX INC. "SD-P" FAST-SETTING UNDERLAYMENT.
      B. LATICRETE INTERNATIONAL, INC. "LATICRETE 220 MEDIUM BED MORTAR MIXED WITH "LATICRETE 3701 LATEX MORTAR ADMIX."
   C. INTERIOR TRAFFIC BEARING TOPPING SYSTEM: TROWELABLE; MINIMUM 28 DAY COMPRESSIVE STRENGTH 5,000 PSI; FOR USE ON RAMPS EXPOSED IN THE FINAL WORK:
      1) ARDEX INC. "SD-M" TROWELABLE, SELF-DRYING, CEMENT BASED, CONCRETE TOPPING"; GRAY COLOR.
   D. ACCESSORIES: FURNISH PRIMERS, PATCHING COMPOUNDS, AND SAND FILLERS AS NECESSARY FOR TROWELABLE APPLICATIONS AND AS RECOMMENDED BY THE UNDERLAYMENT MANUFACTURER FOR THE CONDITIONS OF THE PROJECT.
3. EXECUTION
   A. GENERAL:
      1) MIXING: THOROUGHLY MIX UNDERLAYMENT MATERIALS FOR EACH TYPE OF PRODUCT IN PROPER PROPORTIONS TO ACHIEVE SMOOTH HOMOGENEOUS MIX, FREE OF LUMPS.
      2) WITH THE EXCEPTION OF AREAS WHERE LEVELING CAN BE ACCOMPLISHED BY USE OF LATEX UNDERLAYMENT, AS SPECIFIED IN OTHER SECTIONS, INSTALL CEMENTITIOUS UNDERLAYMENT TO CONCRETE SLABS AS INDICATED ON THE DRAWINGS, AND AS NECESSARY TO LEVEL SLABS OR BRING SUBSTRATES TO PROPER ELEVATION.
   B. PREPARATION
      1) INSPECT FLOOR TO VERIFY THAT DEMOLITION IS COMPLETE TO THE POINT WHERE WORK MAY PROGRESS.
      2) SURVEY FLOOR AS NECESSARY TO SET SCREEDS AND REFERENCE POINTS. IDENTIFY CONSTRUCTION JOINT, CONTROL JOINTS, AND EXPANSION JOINTS. PREPARE FOR UNDERLAYMENT AT ALL LOCATIONS WHERE FLOOR DOES NOT MEET SPECIFIED TOLERANCE REQUIREMENTS.
      3) ENSURE THAT SUBFLOOR IS CLEAN, DRY, HARD, SOUND, AND FREE OF OILS, OR OTHER SUBSTANCE WHICH WOULD AFFECT PROPER BONDING AND CURING. ABRADE OR SHOTBLAST AS NECESSARY TO ACHIEVE CLEAN SURFACE. VERIFY THAT ALL AREAS TO BE LEVELED ARE AT OR BELOW FINAL DESIGN ELEVATION.
      4) DO NOT BEGIN INSTALLATION UNTIL ALL UNSATISFACTORY CONDITIONS ARE RESOLVED. BEGINNING WORK CONSTITUTES ACCEPTANCE OF CONDITIONS AND RESPONSIBILITY FOR DEFECTIVE INSTALLATION CAUSED BY PRIOR OBSERVABLE CONDITIONS.
   C. APPLICATION
      1) INSTALL TROWELABLE UNDERLAYMENT AT LOCATIONS WHERE SLOPES ARE INDICATED AND AT OTHER LOCATIONS AS APPROPRIATE TO INSTALLATION CONDITIONS; INSTALL SELF LEVELING UNDERLAYMENT AT OTHER LOCATIONS AS NECESSARY TO CORRECT SLAB FLATNESS AND LEVELNESS.
      2) INSTALL PATCHING COMPOUNDS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. WHERE SUBSEQUENT FINISHING OF THE MATERIAL IS REQUIRED, FLOAT TO LEVEL SURFACE.
      3) APPLY PRIMER TO ALL AREAS TO RECEIVE UNDERLAYMENT; REPEAT APPLICATION IF NECESSARY TO ACHIEVE PROPER BUILD.
      4) MIX MATERIALS AND POUR OR PUMP AND SQUEEGEE INTO PLACE TO ACHIEVE APPROPRIATE THICKNESS. FINISH TO A SMOOTH LEVEL SURFACE WITHIN TOLERANCES SPECIFIED FOR CONCRETE FLOORS. CURE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
      5) FINISH TO A SMOOTH LEVEL SURFACE WITHIN TOLERANCES SPECIFIED FOR CONCRETE FLOORS.
   C. CURE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
   D. SPECIAL REQUIREMENTS FOR RAMPS EXPOSED IN THE FINAL WORK:
      A) INSTALL TROWELABLE UNDERLAYMENT SYSTEM AT LOCATIONS WHERE RAMPS ARE INDICATED TO BE EXPOSED IN THE FINAL WORK AND NOT COVERED WITH FINISH FLOORING. ACCOMMODATE THICKNESS OF SUBSEQUENT TOPPING SYSTEM.
      B) INSTALL INTERIOR TRAFFIC BEARING TOPPING SYSTEM OVER TROWELABLE UNDERLAYMENT AS WEAR SURFACE IN MINIMUM THICKNESS RECOMMENDED BY THE MANUFACTURER.
      C) SEAL IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
   D. TOLERANCES:
      1) LEVEL SURFACES: ASTM E1155; FF 35, FL 25, OVER TEST AREA; FF 24, FL 17, MINIMUM LOCAL VALUE.
      2) RAMPS AT TRANSITIONS AND SLOPES TO DRAIN: MAXIMUM SLOPE 1/4" PER FOOT.
      3) OTHER RAMPS: AS DETAILED.

DIVISION 04 – MASONRY

NOT USED

DIVISION 05 - METALS

051200 - STRUCTURAL STEEL

1. GENERAL
   A. SECTION INCLUDES: INTERIOR OR CONCEALED STRUCTURAL STEEL ELEMENTS AS INDICATED ON THE STRUCTURAL DRAWINGS.
   B. SUBMITTALS:
      1) SHOP DRAWINGS:
         A) INDICATE PROFILES, SIZES, SPACING, AND LOCATIONS OF STRUCTURAL MEMBERS, CONNECTIONS, ATTACHMENTS, FASTENERS, CAMBERS, AND LOADS.
         B) INDICATE WELDED CONNECTIONS USING STANDARD AWS WELDING SYMBOLS. INDICATE NET WELD LENGTHS.
   C. CERTIFICATIONS: SUBMIT CERTIFICATION OF MATERIALS WITH COPIES OF MILL REPORTS FOR EACH HEAT OF STEEL USED.
   D. QUALITY ASSURANCE:
      1) UNLESS SPECIFIED OR INDICATED OTHERWISE, WORK SHALL COMPLY WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC). SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS, INCLUDING THE "COMMENTARY OF THE AISC SPECIFICATION."
      2) THE WORK OF THIS SECTION IS SUBJECT TO TESTING AND INSPECTION.
      3) USE ONLY AWS CERTIFIED WELDERS.
2. PRODUCTS
   A. MATERIALS:
      1) STEEL MATERIALS: AS INDICATED ON THE STRUCTURAL DRAWINGS.
      2) ACCESSORIES:
         A) WELDING MATERIALS: AWS D1.1; TYPE REQUIRED FOR MATERIALS BEING WELDED.
         B) NON-SHRINK GROUT: MASTER BUILDERS "EMBECO," SONNEBORN "FERROLITH G," OR APPROVED.
      3) PRIMERS:
         A) STANDARD PRIMER: MODIFIED ALKYD; LEAD AND CHROMATE FREE; ONE OF THE FOLLOWING UNLESS APPROVED OTHERWISE.
         B) "AZERON SERIES FD-88" BY TNEMEC COMPANY INC. (816-483-3400).
         C) "AMERCOAT 5105" BY AMERON PROTECTIVE COATINGS (714-529-1951).
         D) "MULTI-BOND 150" BY CARBOLINE (914-644-1000).
   B. FABRICATION:
      1) FABRICATE STRUCTURAL STEEL ITEMS IN ACCORDANCE WITH APPROVED SHOP DRAWINGS.
      2) SHOP FABRICATE IN PARTS OR SECTIONS AS LARGE AS PRACTICABLE.
      3) STANDARD SHOP PRIMER APPLICATION:
         A) PREPARATION: REMOVE RUST AND SCALE BY WIRE BRUSHING, SCRAPING, AND SANDING DOWN TO BARE METAL IN ACCORDANCE WITH SSPC-SP2 AND SP3. WHERE SP2 AND SP3 MEASURES ARE INSUFFICIENT, PROVIDE COMMERCIAL BLAST CLEANING IN ACCORDANCE WITH SSPC-SP6.
         B) APPLICATION: SPRAY APPLY PRIMER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, MIL MINIMUM DRY FILM THICKNESS.
         C) SHOP PRIMER: SHOP PRIME ALL STEEL EXCEPT:
            (1) STEEL ENCASED IN CONCRETE.
            (2) SURFACES TO BE FIELD WELDED.
            (3) CONTACT SURFACES AT HIGH-STRENGTH BOLTS.
            (4) MEMBERS TO BE GALVANIZED.
            (5) SURFACES TO RECEIVE SPRAYED FIREPROOFING.
            (6) SURFACES TO RECEIVE OTHER SPECIAL SHOP PRIMERS.
            (7) STEEL FABRICATIONS SPECIFIED IN SECTION 055019.
3. EXECUTION
   A. ERECTION:
      1) EMBEDDED ITEMS: FURNISH ANCHOR BOLTS AND TEMPLATES, AND OTHER ITEMS AS INDICATED, TO OTHER SECTIONS FOR INSTALLATION PRIOR TO PLACEMENT OF CONCRETE.
      2) TEMPORARY SHORING AND BRACING: PROVIDE AS REQUIRED WITH CONNECTIONS OF SUFFICIENT STRENGTH TO BEAR IMPOSED LOADS. REMOVE TEMPORARY MEMBERS WHEN PERMANENT MEMBERS ARE IN PLACE AND FINAL CONNECTIONS ARE MADE.
      3) TOLERANCES: MAXIMUM DEVIATION FORM PLUMB, LEVEL, AND ALIGNMENT SHALL NOT EXCEED 1 TO 500.
      4) BASE PLATE GROUTING: SET ON LEVELING NUTS TO ACCURATE ELEVATIONS AND GROUT SOLID WITH NON-SHRINK GROUT.
      5) TOUCH-UP PAINTING: IMMEDIATELY AFTER ERECTION, CLEAN FIELD WELDS, BOLTED CONNECTIONS AND ABRADED AREAS. PAINT ALL EXPOSED SURFACES WITH SPECIFIED PRIMER.

055000 - METAL FABRICATIONS

1. GENERAL
   A. SECTION INCLUDES:
      1) STANDARD STEEL FABRICATIONS INDICATED ON THE ARCHITECTURAL DRAWINGS AND NOT SPECIFIED IN OTHER SECTIONS.
      2) STEEL PIPE RAILS.
      3) STRUCTURAL ENGINEERING FOR RAILINGS.
   B. SYSTEM DESCRIPTION:
      1) STRUCTURAL DESIGN:
         A) BIDDER DESIGN IN ACCORDANCE WITH SECTION 016000.
         B) GUARDRAIL ASSEMBLY AND ATTACHMENTS SHALL BE CAPABLE OF RESISTING A FORCE OF 200 LBS AT ANY POINT IN ANY DIRECTION WITHOUT DAMAGE OR PERMANENT SET.
         C) GUARDRAIL ASSEMBLY AND ATTACHMENTS SHALL BE CAPABLE OF RESISTING A FORCE OF 50 PLF IN ANY DIRECTION WITHOUT DAMAGE OR PERMANENT SET.
   C. SUBMITTALS:
      1) SHOP DRAWINGS:
         A) INDICATE PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, SIZE AND TYPE OF FASTENERS, AND ACCESSORIES.
         B) INCLUDE ERECTION DRAWINGS, ELEVATIONS, AND DETAILS WHERE APPLICABLE.
         C) INDICATE ADJACENT CONSTRUCTION.
         D) INDICATE WELDED CONNECTIONS USING STANDARD AWS WELDING SYMBOLS. INDICATE NET WELD LENGTHS.
         E) GUARDRAILS:
            (1) INDICATE KINDS AND QUANTITIES OF MATERIAL, METHODS OF MOUNTING AND ANCHORING, AND RELATIONSHIP TO ADJOINING MATERIALS.
            (2) INDICATE RAIL CONNECTING AND JOINING METHODS AND LOCATIONS.
            (3) CLEARLY INDICATE FABRICATION AND ERECTION TECHNIQUES.
            (4) INDICATE STRUCTURAL REQUIREMENTS AND SUPPORTS.
            (5) CALL ATTENTION TO ALL PROCEDURES WHICH MAY AFFECT THE APPEARANCE OF THE FINISHED WORK.
            (6) INCLUDE STRUCTURAL ENGINEER'S SEAL.
   D. QUALITY ASSURANCE:
      1) FABRICATOR QUALIFICATIONS: EXPERIENCED AND REGULARLY ENGAGED IN PRODUCING METAL FABRICATIONS OF THE TYPE SPECIFIED; MUST EMPLOY ONLY SKILLED PERSONNEL USING PROPER EQUIPMENT TO PRODUCE WORK.
      2) RAIL STRUCTURAL DESIGN: STRUCTURAL DESIGN OF GUARDRAILS SHALL BE BY A STRUCTURAL ENGINEER LICENSED TO PRACTICE IN THE STATE WHERE THE PROJECT IS LOCATED.
   E. REGULATORY REQUIREMENTS:
      A) RAILINGS SHALL MEET THE REQUIREMENTS OF THE JURISDICTIONAL CODE AUTHORITIES, INCLUDING APPLICABLE ADA CODE REQUIREMENTS FOR THE HANDICAPPED.
      B) FURNISH ALL CALCULATIONS, ENGINEER'S STAMPS, DRAWINGS, AND OTHER ITEMS REQUIRED BY THE CODE AUTHORITIES TO OBTAIN APPROVAL OF THE INSTALLATION.
2. PRODUCTS
   A. MATERIALS:
      1) STEEL PLATE, BARS, SHAPES: ASTM A36.
      2) TUBES: ASTM A500 OR A501.
      3) PIPE: ASTM A53, SEAMLESS, TYPE S, PLAIN END; SCHEDULE 40 UNLESS INDICATED OTHERWISE.
      4) BOLTS AND NUTS: ASTM A307
      5) GALVANIZED SHEET STEEL: ASTM A653, GAGE AS SPECIFIED.
      6) SHEET FURNITURE STEEL: AMERICAN OPEN-HEARTH SHEET STEEL, FURNITURE QUALITY, FREE FROM SCALE, RUST PITTING OR OTHER DEFECTS AFFECTING APPEARANCE.
      7) STEEL RAILING SYSTEM:
         A) RAILS: ASTM A53, OR APPROVED, STEEL TUBING OR PIPE; WELDED; O.D. AS INDICATED ON THE DRAWINGS.
         B) STEEL PLATE, BARS, AND SHAPES: ASTM A36.
         C) FITTINGS: ELBOWS, TEE-SHAPES, WALL BRACKETS, AND ESCUTCHEONS AS INDICATED.
         D) MOUNTING: GROUT POCKETS, AS INDICATED.
         E) SPLICE CONNECTORS: STAINLESS STEEL CONCEALED WELD TYPE CONNECTORS; BUTT AND COPED SHAPES, AS REQUIRED.
      8) NON-SHRINK GROUT
         A) EUCLID CHEMICAL CO. (CLEVELAND, OH; 800-321-7628) "NS GROUT".
         B) L&M CONSTRUCTION CHEMICALS, INC. (OMAHA, NE; 402-453-6600) "DURAGROUT".
         C) US SPEC (DENVER, CO; 800-397-9903) "GP GROUT."
      9) INTERIOR STANDARD SHOP APPLIED PRIMER: MODIFIED ALKYD TYPE (VOC COMPLIANT); LEAD AND CHROMATE FREE; GRAY OR WHITE COLOR; ONE OF THE FOLLOWING UNLESS APPROVED OTHERWISE.
         A) "AZERON PRIMER SERIES FD88" BY TNEMEC COMPANY INC. (KANSAS CITY, MO; 816-483-3400).
         B) "AMERCOAT 5105" BY AMERON PROTECTIVE COATINGS (BREA, CA; 714-529-1951).
         C) "MULTI-BOND 150" BY CARBOLINE COMPANY (ST. LOUIS, MO; 314-644-1000; 800-848-4645).
   B. GENERAL FABRICATION REQUIREMENTS: FABRICATE AS FOLLOWS, UNLESS SPECIFIED OR INDICATED OTHERWISE.
      1) VERIFY ALL DIMENSIONS AND FABRICATE TO DETAIL WITH ACCURATE SIZES AND SHAPES, STRAIGHT LINES, SMOOTH CURVES, AND SHARP ANGLES.
      2) WELDS SHALL HAVE SUFFICIENT STRENGTH TO WITHSTAND THE LOADS APPLIED.
      3) FOR ITEMS EXPOSED TO VIEW OR SUBJECT TO CONTACT, GRIND WELDS SMOOTH AND LEVEL WITH ADJACENT SURFACES; REMOVE ALL BURRS FROM CUT EDGES. FILL IMPERFECTIONS WITH BODY PUTTY AS NECESSARY FOR A SMOOTH EVEN FINISH.
      4) BEND CURVED SECTIONS TO A SMOOTH RADIUS FREE FROM BUCKLES AND TWISTS.
   C. RAILING FABRICATION:
      1) VERIFY DIMENSIONS OF EXISTING CONDITIONS PRIOR TO FABRICATION.
      2) FIT AND SHOP ASSEMBLE SECTIONS IN LARGEST PRACTICAL SIZES, FOR DELIVERY TO SITE AND INSTALLATION. MAKE JOINTS TIGHT, SMOOTH, AND ACCURATELY FITTED. WELD ALL SHOP JOINTS, EXCEPT AS OTHERWISE INDICATED.
      3) UNLESS OTHERWISE INDICATED, PROVIDE FLAT END CAPS, WELDED IN PLACE AT ALL EXPOSED RAIL ENDS.
      4) GRIND EXPOSED WELDS SMOOTH AND FLUSH WITH ADJACENT SURFACES.
      5) FURNISH COMPONENTS REQUIRED FOR SECURE ANCHORAGE OF RAILINGS.
      6) ACCURATELY FORM COMPONENTS REQUIRED FOR ANCHORAGE OF RAILINGS TO EACH OTHER AND TO WALLS AND WALKS.
   D. SHOP FINISHES:
      1) HOT DIP GALVANIZING:
         A) STEEL FABRICATIONS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123. BOLTS, NUTS, WASHERS, AND OTHER HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH A153.
         B) SURFACE FINISH: THE GALVANIZED COATINGS SHALL BE CONTINUOUS, FIRMLY ADHERED, SMOOTH, AND FREE FROM DEFECTS.
         C) PROVIDE GALVANIZED FINISH AT BACK OF HOUSE CORNER GUARDS.
      2) INTERIOR FINISHES:
         A) PREPARATION: SOLVENT CLEAN IN ACCORDANCE WITH SSPC-SP1. REMOVE RUST AND SCALE BY WIRE BRUSHING, SCRAPING, AND SANDING DOWN TO BARE METAL IN ACCORDANCE WITH SSPC-SP2 AND SP3. WHERE SP2 AND SP3 MEASURES ARE INSUFFICIENT, PROVIDE COMMERCIAL BLAST CLEANING IN ACCORDANCE WITH SSPC-SP6. IMMEDIATELY APPLY SPECIFIED PRIME COAT FOR FABRICATIONS SCHEDULED FOR PAINT FINISH.
         B) UNLESS OTHERWISE INDICATED, APPLY INTERIOR PRIMER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
         C) APPLY PRIMER TO FABRICATIONS AS SCHEDULED BELOW.
3. EXECUTION
   A. INSTALLATION:
      1) INSTALL METAL FABRICATIONS IN ACCURATE LOCATIONS SHOWN. UNLESS INDICATED OTHERWISE, FABRICATIONS SHALL BE INSTALLED PLUMB AND LEVEL.
      2) PROVIDE ALL ANCHORAGE DEVICES AS INDICATED AND REQUIRED FOR A SECURE INSTALLATION.
      3) TOUCH-UP ALL SURFACES DAMAGED DURING INSTALLATION. PATCH ALL WELDS AND DAMAGE MARKS WITH MATCHING PRIMER.
      4) HAND AND GUARD RAILS:
         A) RAIL GROUTING
         B) USE NON-SHRINK GROUT IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
         C) PROTECT ADJACENT FINISHED SURFACES FROM DEFACEMENT.
         D) PROVIDE AT HANDRAILS INSERTED INTO CONCRETE CONSTRUCTION CORE DRILLED OR WITH EMBEDMENT SLEEVES, AND OTHER LOCATIONS WHERE INDICATED.
   B. SCHEDULE: THE FOLLOWING IS A LIST OF THE PRINCIPAL METAL FABRICATION ITEMS AND THEIR RESPECTIVE FINISHES. FABRICATE AND INSTALL EACH ITEM TO THE GENERAL FABRICATION AND INSTALLATION REQUIREMENTS, AND TO ANY ADDITIONAL FABRICATION REQUIREMENTS WHICH MIGHT BE LISTED BELOW. REFER TO DRAWINGS FOR ADDITIONAL ITEMS NOT SPECIFICALLY SCHEDULED.
      1) INTERIOR BOH PIPE GUARDRAILS, RAILINGS: PRIMER FOR FINISHING UNDER SECTION 099000.
      2) CHANNEL SUPPORT SYSTEMS OR CEILING MOUNTED EQUIPMENT AND FIXTURES: ALL CONNECTIONS BOLTED AND CLAMPED; FACTORY FINISH (TOUCH-UP NOT REQUIRED).
      3) INTERIOR METAL CORNER GUARDS AT SALES FLOOR: 16 GAGE SHEET STEEL; LEG DIMENSION AND LENGTH AS INDICATED; EXPOSED COUNTERSUNK OVAL HEAD SCREW FASTENINGS EQUALLY SPACED; ALL EDGES EASED; SPECIAL FINISH.
      4) INTERIOR METAL CORNER GUARDS AT BACK OF HOUSE: 16 GAGE GALVANIZED SHEET STEEL; LEG DIMENSION AND LENGTH AS INDICATED; EXPOSED COUNTERSUNK OVAL HEAD SCREW FASTENINGS EQUALLY SPACED; ALL EDGES EASED.

3

055133 - PREFABRICATED LADDER [Δ3]

1. GENERAL
   A. SECTION INCLUDES:
      1) PREFABRICATED LADDER ASSEMBLY.
      2) SAFETY POST.
   B. SUBMITTALS:
      1) SHOP DRAWINGS:
         A) INDICATE MATERIALS, THICKNESSES, FINISHES, DIMENSIONS, METHODS OF JOINING AND ANCHORING, AND RELATIONSHIP TO ADJACENT CONSTRUCTION.
         B) INCLUDE ALL TYPICAL AND SPECIAL DETAILS DRAWN AT FULL SCALE.
         C) NOTE ALL CONDITIONS WHICH MAY AFFECT THE APPEARANCE OF THE FINISHED WORK.
         D) INDICATE PROVISIONS FOR MATERIAL ISOLATION.
      2) PRODUCT DATA. FOR LADDER AND POST.
   C. QUALITY ASSURANCE: LADDER SHALL CONFORM TO ALL APPLICABLE CODE AND SAFETY REQUIREMENTS. PROVIDE ALL CALCULATIONS, ENGINEERING SERVICES, AND OTHER DOCUMENTATION REQUIRED BY THE CODE AUTHORITIES TO OBTAIN APPROVAL FOR THE LADDER ASSEMBLY.
2. PRODUCTS
   A. LADDER ASSEMBLY:
      1) MANUFACTURER:
         A) BASIS OF DESIGN: O'KEEFFE'S INC. (SAN FRANCISCO, CA: 800-227-3305).
         B) ACCEPTABLE OPTIONS (SUBJECT TO COMPLIANCE WITH CONTRACT DOCUMENT REQUIREMENTS AND ARCHITECT'S APPROVAL OF CONFORMANCE TO DESIGN INTENT.):
            (1) ALACO LADDER COMPANY (CHINO CA: 909-591-7561).
            (2) ACL INDUSTRIES INC. (MANCHESTER, NH; 603-668-1281).
            (3) PRECISION LADDERS LLC (MORRISTOWN, TN; 423-586-2265).
      2) ROOF HATCH ACCESS: NO. 500 "STANDARD DUTY CHANNEL RAIL FIXED ACCESS LADDER"; MILL FINISH ALUMINUM; "ALTERNATE BOTTOM SUPPORT"; MILL FINISH
      3) COMPONENTS:
         A) RUNGS: ALUMINUM; 1-1/4" SQUARE OR 1-1/8" ROUND TUBE; NON-SLIP FINISH; ABLE TO RESIST 1000 LB POINT LOADING WITHOUT FAILURE.
         B) SIDE RAILS: ALUMINUM; MINIMUM .125 INCH THICK.
         C) FASTENERS: STAINLESS STEEL.
         D) MOUNTING ANCHORS: MINIMUM 1/2" DIAMETER; TYPE AS APPROPRIATE TO THE INSTALLATION; GALVANIZED OR STAINLESS STEEL; LOW PROFILE TO PREVENT TRIPPING, INJURY OR OTHER HAZARD; FREE OF SHARP EDGES.
      4) FABRICATION:
         A) FABRICATE LADDER ASSEMBLIES TO FIT THE CONDITIONS INDICATED. SURFACES SHALL BE CLEAN, SMOOTH, AND FREE OF BURRS.
         B) STRUCTURAL JOINTS SHALL BE FULL PENETRATION INERT-GAS HELIARC WELDED.
         C) FABRICATE ASSEMBLIES WITH BRACKETS AND OTHER COMPONENTS AS NECESSARY FOR MOUNTING TO ADJACENT CONSTRUCTION.
   B. SAFETY POST:
      1) THE BILCO COMPANY (NEW HAVEN, CT; 203-934-6363).
         A) SAFETY POST: "LADDERUP" MODEL LU-4; ALUMINUM; MILL FINISH.
         B) POST SHALL INCLUDE TELESCOPING SECTION THAT LOCKS AUTOMATICALLY WHEN FULLY EXTENDED.
         C) INCLUDE STAINLESS STEEL SPRING COUNTERBALANCING MECHANISM.
3. EXECUTION
   A. INSTALLATION:
      1) INSTALL IN ACCORDANCE WITH SHOP DRAWINGS MANUFACTURER'S INSTRUCTIONS. REFER TO THE STRUCTURAL DRAWINGS FOR BLOCKING REQUIREMENTS.
      2) ERECT SQUARE AND LEVEL, FREE FROM DISTORTION OR DEFECTS DETRIMENTAL TO PERFORMANCE.
      3) SECURE LADDER IN PLACE IN ACCORDANCE WITH THE SHOP DRAWINGS AND THE MANUFACTURER'S INSTRUCTIONS.
      4) INSTALL SAFETY POST AT VERTICAL LADDER.

055141 – ARCHITECTURAL STAIRS AND RAILINGS

1. GENERAL
   A. SECTION INCLUDES:
      1) ORNAMENTAL QUALITY STEEL STAIRS AND RAILINGS WHERE INDICATED ON THE DRAWINGS.
      2) STRUCTURAL ENGINEERING FOR ARCHITECTURAL STAIRS AND RAILINGS NOT INDICATED ON THE STRUCTURAL DRAWINGS.
   B. SYSTEM REQUIREMENTS:
      1) STAIR SYSTEMS ARE SUBJECT TO THE STRUCTURAL REQUIREMENTS INDICATED AND SPECIFIED. DO NOT MODIFY DESIGN DETAILS INDICATED, UNLESS APPROVED OTHERWISE BY THE ARCHITECT.
      2) STRUCTURAL REQUIREMENTS:
         A) RAILING ASSEMBLIES AND ATTACHMENTS SHALL BE CAPABLE OF RESISTING A FORCE OF 200 LBS AT ANY POINT IN ANY DIRECTION WITHOUT DAMAGE OR PERMANENT SET.
         B) RAILING ASSEMBLIES AND ATTACHMENTS SHALL BE CAPABLE OF RESISTING A FORCE OF 50 PLF IN ANY DIRECTION WITHOUT DAMAGE OR PERMANENT SET.
         C) TREAD, LANDING, AND STRINGER DEFLECTIONS SHALL BE LIMITED TO 1/360 SPAN UNDER DESIGN LIVE LOADING INDICATED IN THE STRUCTURAL NOTES.
         D) CONFORM TO CODE REQUIREMENTS.
   C. SUBMITTALS:
      1) PRODUCT DATA: FINISH COATING MATERIALS.
      2) SHOP DRAWINGS:
         A) INDICATE PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, OPENINGS, SIZE AND TYPE OF FASTENERS, AND ACCESSORIES.
         B) INCLUDE ERECTION DRAWINGS, ELEVATIONS, AND DETAILS WHERE APPLICABLE.
         C) INDICATE WELDED CONNECTIONS USING STANDARD AWS WELDING SYMBOLS. INDICATE NET WELD LENGTHS.
         D) INCLUDE STAMP OF DESIGNING STRUCTURAL ENGINEER.
      3) SAMPLES: SUBMIT A MINIMUM 12 INCH LENGTH OF PIPE RAILING COMPLETE WITH PROPOSED FINISH.
      4) QUALITY CONTRO