Tax Credit 10 Spec. Book

TABLE OF CONTENTS

SECTION 02100 SITE CLEARING 3
SECTION 02223 EARTHWORK, EXCAVATION, GRADING, COMPACTION .. 6
SECTION 02281 TERMITE CONTROL 14
SECTION 03310 CONCRETE 17
SECTION 03500 GROUTING & COATING CONCRETE SAW CUTS. 39
SECTION 04220 CONCRETE MASONRY UNITS..... 40
SECTION 04400 STONE VENEER 54
SECTION 06100 ROUGH CARPENTRY..... 52
SECTION 06192 PREFABRICATED TRUSSES..... 63
SECTION 06200 FINISH CARPENTRY 66
SECTION 06621 CULTURED MARBLE 71
SECTION 07213 BUILDING INSULATION 74
SECTION 07510 COOL ROOF TILES..... 78
SECTION 07600 FLASHING AND SHEET METAL 81
SECTION 07920 SEALANTS AND CAULKING 87
SECTION 08111 FIBERGLASS INSULATED DOORS 80
SECTION 08145 SECURITY SCREEN DOORS 85
SECTION 08211 WOOD DOORS 99
SECTION 08310 ACCESS DOORS AND FRAMES..... 103
SECTION 08520 VINYL WINDOWS 105
SECTION 08710 FINISH HARDWARE..... 108
SECTION 09200 LATH AND PLASTER (STUCCO) 115
SECTION 09250 GYPSUM WALLBOARD 119
SECTION 09900 PAINTING 124
SECTION 10520 FIRE EXTINGUISHERS 134

Tax Credit 10 Spec. Book

SECTION 10800 BATHROOM ACCESSORIES 137
SECTION 11450 APPLIANCES 142
SECTION 11900 RESIDENTIAL EQUIPMENT AND SPECIALTIES 143
SECTION 12370 WOOD CABINETS 145
SECTION 12492 BLINDS 150
SECTION 15400 PLUMBING 152
SECTION 15650 HEATING, VENTILATING, AIR CONDITIONING 162
SECTION 16000 ELECTRICAL 165
ENERGY MANAGEMENT 172

SECTION 02100
SITE CLEARING

PART 1 GENERAL

1.01 SECTION INCLUDES, BUT NOT LIMITED TO:

A. Includes labor and equipment specified, shown, or reasonably implied to perform grubbing, site clearing, and top soil removal.

B. Protection of existing improvements:
1. Protect all existing improvements on site and adjacent properties, including storage sheds and recreational areas.
2. No on-site burning shall be permitted.
3. Restore any improvements damaged by this work to their original condition.

PART 2 PRODUCTS

None

PART 3 EXECUTION

3.01 TOPSOIL REMOVAL

A. Satisfactory topsoil for landscaping is reasonably free of subsoil, clay lumps, stones, and other objectionable material.

B. Strip topsoil at areas of fill and construction to whatever depth encountered, and in a manner so as to prevent intermingling with the underlying subsoil.

C. Stockpile topsoil in temporary storage piles in areas on-site acceptable with the YAN. Construct storage piles to drain surface water freely. Stockpiles shall be located so as to not interfere with construction or fill operations.

SECTION 02100
SITE CLEARING

A. GENERAL: Clearing and grubbing shall be required for the area of the new residence and driveway.

B. CLEARING: Clearing shall consist of removal and disposal of trees, brush, bushes, and other vegetation as well as any and all down timber, brush, snags, and rubbish within the areas to be cleared. Individual trees, groups of trees or other vegetation not required to be removed by construction shall be protected, insofar as practical, and left standing where determined to be of value by YAN.

C. GRUBBING: Stumps, roots larger than two (2) inches in diameter and matted roots shall be removed from within six (6) inches of surface at areas where fill is to be constructed. All areas disturbed by grubbing shall be filled as specified hereinafter as required.

D. GRASS AND TOPSOIL: Grass, grass roots and incidental topsoil shall not be left below any fill areas, nor shall this material be used as fill material. Grass and grass roots shall be disposed of while topsoil may be stockpiled and later used in the top six (6) inches of fills outside of building pads.

3.03 SITE IMPROVEMENTS TO BE REMOVED

A. SEPTIC TANK: Any septic tanks, foundations, and debris of any type must be removed from the site prior to any building, grading or fill operations. Septic tanks, including all connecting drain fields and other lines, must be totally removed and resulting depressions properly filled and compacted to the complete satisfaction of the Architect/designer and Engineer.

B. WATER WELLS: Any water wells on the site shall be capped. Notify Architect/designer immediately of any such discovery. The strength of caps must be at least equal to the adjacent soil. Verify

the final elevation of the top of adjacent grades with Architect/designer prior to any grading or fill operations.

C. BURIED TANKS: Buried tanks, if encountered, must be totally removed and the resulting depressions properly filled and compacted to the complete satisfaction of the Architect/designer and Engineer.

END OF SECTION

SECTION 02223
EARTHWORK, EXCAVATION, GRADING, COMPACTION

PART I GENERAL

1.01 SECTION INCLUDES, BUT NOT LIMITED TO:

A. Excavating, filling, and grading for this work includes but is not Necessarily limited to:
1. Filling and backfilling to attain indicated grades.
2. Trenching and trench backfilling.
3. Rough and finish grading of the sites.
4. Aggregate base course.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, and Special Conditions, apply to the work specified in this section.

1.03 QUALITY ASSURANCE

A. Soils Engineer will be retained by YAN to observe and test performance of work in connection with excavating, trenching, filling, backfilling and grading.

1.04 JOB CONDITIONS

A. Dust control:
1. Use all means necessary to control dust on and near the work and on and near all off-site borrow areas if such dust is caused by the- Contractor's operations during performance of the Work or if resulting from the condition in which the Contractor leaves the site.
2. Thoroughly moisten all surfaces as required to prevent dust being a nuisance to the public and neighbors.

1.05 PROTECTION: Use all means necessary to protect all trees and other structures designated to remain before, during and after installation.

PART 2 PRODUCTS

2.01 FILL MATERIAL, GENERAL

A. Approval required: All fill material shall be subject to the approval of the Soils Engineer or Architect/designer.

B. Notification: For approval of import fill material, notify the Owner and Architect/designer at least thirty (30) working days in advance of intention to import material. Designate the proposed borrow area,

SECTION 02223
EARTHWORK, EXCAVATION, GRADING, COMPACTION

And provide the Architect/designer with soil test as from the borrow area for the purpose of reviewing the tests to prove the quality of the material.

2.02 FILL MATERIAL

A. Obtain borrow material from borrow areas off-site, selected by Contractor. Contractor shall obtain from YAN the right to procure the material, pay all charges involved and bear all expense of developing the sources.

B. Topsoil: Remove topsoil on site without contamination of subsoil and stockpile convenient to the site for later application over sub fill.

2.03 IMPORTED FILL MATERIAL

A. Conform to the following:
1. Gradation (ASTM: CI36), Percent passing by weight.

SIEVE SIZE	LOW EXPANSION POTENTIAL
3"……..	100
11/2"……..	--
No. 4……..	25-50
No. 200……	40 max.

2. Liquid Limit ASTM: D423…… 30 max.
3. Maximum Plasticity Index (ASTM: D424……. 6
4. Maximum Expansion Potential …….. 1.5

2.04 ON-SITE FILL MATERIAL: Sands or silty-sands mixture free from organic matter and other deleterious material. No rocks or lumps over 6" in greatest dimension and not more than 15% larger than 2-1/2" in greatest dimension.

2.05 AGGREGATE BASE COURSE: Hard durable particles of stone or gravel, with the following gradation requirements.

PERCENTAGE BY WEIGHT

SIEVE SIZE PASSING SIEVES

1"…… 100
3/4" ……90-100
3/8" …… 50-75
No.4…….35-65
No. 10…….. 25-50
No. 16……..15-40

SECTION 02223
EARTHWORK, EXCAVATION, GRADING, COMPACTION

No. 40……..10-30
No. 80……5-20
No. 200……..2-15

PART 3 EXECUTION

3.01 SAFETY PROVISIONS: Comply with U.S. Department of Labor Occupational Safety and Health Administration (OSHA), Clause 13 of General Conditions, State and local requirements.

3.02 FAMILIARIZATION: Prior to all work of this section, become thoroughly familiar with the site, site conditions, and all portions of the work falling within this section.

3.03 BUILDING PAD: Preparation of building area and the placement and compaction of fills should extend a minimum often (10) feet beyond the perimeter of structures.

3.04 EXCAVATING

A. Depressions: Where depressions result from, or have resulted from, the removal of surface or subsurface obstructions, open the depression to equipment working width and removal all debris and soft material as directed by the Architect/designer.

B. Other areas: Excavate to grades shown on the drawings. Where excavation grades are not show on the drawings, excavate as required to accommodate the installation.

C. Over-excavation: Backfill and compact allover-excavated areas.

3.05 SUBGRADE PREPARATION

A. Clearing of Fill Areas: Remove all vegetation, debris, existing fill, loose soil from building areas.

B. Leveling of fill areas: Level all surfaces, remove all ruts, hummocks, sharp rocks, breaks or other uneven features which

would prevent uniform compaction. Fill depressions or holes resulting from tree removals. Grade areas steeper than 5:1 (horizontal to vertical) to prevent development of slippage planes between existing slopes and fills.

C. Scarifying and compacting fill areas:

SECTION 02223
EARTHWORK, EXCAVATION, GRADING, COMPACTION

3.06 FILL PLACEMENT: Depth and Mixing of Fill Layers: Fill materials shall be placed in horizontal layers which shall not exceed eight (8) inches in compacted thickness. Each layer shall be thoroughly mixed to a uniform moisture content consistent with compaction requirements. Engineered fill shall be inspected by Western Technologies Inc. or ETC from Cottonwood, Arizona.

3.08 EARTHWORK FOR DRIVEWAYS

A. Preparation of Sub grade:
1. Scarify and loosen sub grade to a depth of eight (8) inches. When fill material is required, spread and compact a layer of fill material approximately eight (8) inches with sub grade material to provide a better bond.
2. Construct sub grade cut and fill areas to achieve a uniform soil structure having 95% density as determined by AASHTO T -99, Method C, and tested in accordance with AASHTO T -191 or ASTM D-2922 and D-698.

B. Sub grade Tolerances: Sub grade upon which sub-base or base materials is to be placed shall not vary more than 3/4" from specified grade and cross- section. Grade areas where grade only is called for on the plans to tolerances as above; construct surface to a straight grade from finished pavement elevations shown on plans to elevations of existing ground at extremities of the area to be graded.

C. Surface preparation:
1. Aggregate Base Course: Check sub grade for conformity with elevations and sections immediately before placing aggregate base material.
2. Place aggregate base material; apply water to assure proper, uniform compaction, blade to uniform layer to finish net six (6) inches.

3. Spread, shape, and compact all aggregate base material deposited on the sub grade during the same day.
4. Compact aggregate base course material to not less than 95% of maximum density: ASTM D-1557, Method D.

D. Shoulders: Trim and shape roadbed shoulders to the finished cross section to produce smooth surfaces and slopes.

3.09 TRENCHING

A. Protection of excavation:

SECTION 02223
EARTHWORK, EXCAVATION, GRADING, COMPACTION

1. Properly support all trenches in strict accordance with U. S. Department of Labor Occupational Safety and Health Administration (OSHA).
2. Brace, sheet, and support trench walls in such a manner that they will be safe and that the ground alongside the excavation will not slide or settle.
3. Total length of open trench shall not exceed five hundred (500) feet at any time. Completely backfill all trenches by the end of each working day.
4. Protect any unattended excavation deeper than five (5) feet with six (6) foot high chain link fence.

B. Trenching:
1. Perform all trenching required for the installation of items where the trenching is not specifically described in other sections of these specifications.
2. Note specific requirements for sewer and water trenching, backfilling and compaction in their respective specification section.
3. Make all trenches open construction with sufficient width to provide free working space at both sides of the trench and around the installed items as required for caulking, joining, backfilling and compacting.
4. Trench as required to provide the elevations shown on the drawings.
5. Correction of faulty grades where trench excavation is inadvertently carried below proper elevations, backfill with material approved by the Architect/designer. Then compact to provide a firm and unyielding sub grade and/or foundation to the approval of the Architect/designer and at no additional cost to the YAN.

3.10 BACKFILLING

A. General:
1. Clean the excavations of trash and debris.
2. Employ methods which will not disturb the adjacent work.
3. Maintain optimum moisture content of backfill materials to attain required compaction.

B. Walls and Structures:
1. Simultaneously backfill against each side of unsupported walls and foundations.

2. Unless noted otherwise, slope grade away from buildings a minimum of 2 inches in 5 feet.

C. Trenches:

1. Backfill pipe and conduit trenches in a manner which will not disturb the pipes or conduits. Provide supports as necessary. Fill under and around pipes and conduit with clean sand shading to a point approximately 8 inches above the top of the pipe and compact.
2. Install marker tape.
3. Backfill remainder of trench in 8 inch layers and compact.
4. Public utility pipes, conduits, and lines: Backfill in accordance with utility company's standards.
5. Trenches occurring in public right-of-way: Backfill in accordance with requirements of public agency having jurisdiction.

LANDSCAPE

1. Yard to be graded and raked free of rock. Maintain fall away from homes.
2. Provide and install a backflow device below grade in a box , as well as a PRV Valve
3. Install a complete drip irrigation system for each home, with connection to main, clock and all required lines and fittings. High Efficiency zoned irrigation system.
4. Provide 1 trees and 4- 5 gallon shrubs for each unit. Trees are to be a minimum of 10’ tall and 3” in diameter. Trees to Be staked to prevent wind from dislodging trees. Provide submittals for type of tree and shrubs for approval. All planting to be drought resistant.
5. Provide and install weed control fabric and ground cover. Ground cover to be 1” rock, color TBD by submittal and is to cover all of front and back yard and extend down each side of house.

6 Fertilize plantings to insure growth.
7 Remove all trash and place in a dumpster.

END OF SECTION

SECTION 02281
TERMITE CONTROL Performed by YANTH

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Treatment of the soil for termite control as specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified n this section.
B. Earthwork Section…… 02223.
C. Concrete Section…… 03310.

1.03 QUALITY ASSURANCE

A. Applicator's equipment must include a flow meter to assure the quantity of chemical is being applied. Apply chemicals during normal working hours. Notify Tribal Office before proceeding with work, all chemicals and mixes must be approved by the Tribal office before proceeding with the Work. Tribal Inspector and/or Project Representative must be present when chemical is being applied.

B. Project Representative shall take random samples direct from hose nozzle for laboratory analysis. If chemicals are not at strength specified, the Contractor shall re-treat exposed areas; and drill and treat under slabs already poured per directions of Architect/designer.

C. Applicator Qualifications: Registered or licensed where required by state, county, or Tribal jurisdictions.

D. Guarantee:
1. On final acceptance furnish YAN written bonded guarantee stating application was made in accordance with this specification.
2. Guarantee effectiveness of treatment for not less than five (5) years certifying that the applied soil treatment will prevent infestation of subterranean termites and that if termite activity is discovered during the warranty period, Contractor will re-treat soil and will repair or replace damage caused by termite infestation.

SECTION 02281
TERMITE CONTROL

1.04 SUBMITTALS:

A. General: Comply with the General Requirements, Shop Drawings, Product Data and Samples.

B. Manufacturer's Literature: Manufacturer's recommended installation instructions.

C. Certificates: Manufacturer's certification that materials meet specific requirements.

PART 2 PRODUCTS

2.01 MATERIALS

A. Toxicants:
1. Water-based emulsions.
2. Chemicals
   a. Dursban TC 1.0% in water emulsion.

B. Proprietary formulas must be registered in the State of Arizona chemist's office. Submit EPA label before commencing work. Apply at label strength and dosage.

2.02 Mixes: Follow manufacturer's mixing instructions in presence of the Project Representative.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that soil is in friable condition with moisture content low enough to permit absorption of toxicant solution.

B. Do not begin work until earthwork for foundation has been complete.

C: Do not apply chemicals in inclement weather or when there is a possibility of rain.

SECTION 02281
TERMITE CONTROL

3.02 APPLICATION

A. Sufficient notice shall be given to permit application to be made at least 12 hours prior to concrete placement. To avoid surface flow of the toxicant from the application site, treatment shall not be made when soil or fill is excessively wet. Apply only after all preparation for slab placement has been completed. There shall be no disturbance of treated areas.

B. Location:
   1. Apply soil treatment to areas beneath house, carport and storage room slabs on grade or fill, and along interior sides of foundation walls and grade beams.
   2. Where exterior is abutted by concrete slabs, asphalt paving or other permanent surfacing, treat exterior sides of foundation walls and grade beams as specified for interior sides of such walls.

C. Rate of Application:
   1. Building Areas: Apply soil treatment at minimum rate of one (1) gallon to each ten (10) square foot of area under building within building lines.
   2. Foundation Walls: Treat voids of foundation walls at rate of two (2) gallons per five (5) lineal feet.
   3. Miscellaneous: Apply soil treatment at the rate of two (2) gallons per five (5) lineal feet in following areas:
      a. Immediately below expansion joints.
      b. Control joints.
      c. Areas where slab will be penetrated by construction features.

END OF SECTION

SECTION 03310
CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Concrete foundations, slabs, sidewalks, carports, porches, splash blocks, and LP tank pads, as shown on the drawings and as specified herein. All concrete and A/B to be purchased from Yavapai Apache Redi-Mix

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.
B. Subsurface conditions…… Section 02010.
C. Earthwork, Excavation, Backfill ……..Section 02223.
D. Sealants and Caulking…….. Section 07920.
E. Refer to General Structural Notes on Sheet 5.1, for additional information

1.03 SUBMITTALS

A. Product Data: Submit data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, joint systems, curing compounds, and others as requested by Architect/designer.

B. Laboratory Test Reports: Submit laboratory test reports for concrete materials and mix design test.

C. Materials Certificates: Provide materials certificates in lieu of materials laboratory test reports when permitted by Architect/designer. Materials Certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with, or exceeds, specified requirements. Provide certification from admixture manufacturers that chloride content complies with specification requirements.

1.04 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of following codes, specifications, and standards, except where more stringent requirements are shown or specified.
1. ACI301 "Specifications for Structural Concrete for Buildings".
2. CI 318 "Building Code Requirements for Reinforced Concrete".

3. Concrete Reinforcing Steel Institute (CRSI), "Manual of Standard Practice".

SECTION 03310
CONCRETE

B. Materials and installed work may require testing and retesting at anytime during progress of work. Tests, including retesting of rejected materials for installed work, shall be done at Contractor's expense.

C. Allowable tolerances: Flatwork true to plane 1/8" in ten (10) feet.

1.05 PROJECT CONDITIONS

A. Protection of footings against freezing: Cover completed work at footing level with sufficient temporary or permanent cover as required to protect footings and adjacent sub grade against possibility of freezing; maintain cover for time period as necessary.

B. Protect adjacent finish materials against spatter during concrete placement.

PART 2 PRODUCTS

2.01 FORM MATERIALS

A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.
   1. Use overlaid plywood complying with U.S. Product Standard PS-l "A-C or B-B High Density Overlaid Concrete Form", Class I.
   2. Use plywood complying with U.S. Product Standard PS-l "B-B (Concrete Form) Plywood", Class I, Exterior Grade or better, mill- oiled and edge-sealed, with each piece bearing legible inspection trademark.

B. Form of Unexposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.

C. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain, nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

SECTION 03310
CONCRETE

D. Form Ties: Factory-fabricated, adjustable-length, removable or snap off metal form ties, designed to prevent form deflection and to prevent spalling concrete upon removal. Provide units which will leave no metal closer than 1 - 1/2" to surface.
   1. Provide ties which, when removed, will leave holes not larger than 1" diameter in concrete surface.

2.02 REINFORCING MATERIALS

A. Reinforcing Bars: ASTM A 615, Grade 40 deformed. For Bars #5 and Smaller ASTM A 615, Grade 60 deformed. For Bars # 6 and larger. Homes and Driveway to have 1/2" mat at 2' OC.

B. Steel Wire: ASTM A 82, plain cold-drawn steel.

C. Welded Wire Fabric: ASTM A 185, welded steel wire fabric. Not to
b be used.

C. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI specifications.

D. See General Structural notes for additional information.

2.03 CONCRETE MATERIALS From Yavapai-Apache Sand and Rock

A. Portland Cement: ASTM C 150, Type II.

B. Use one brand of cement throughout project, unless otherwise acceptable to Architect/designer.

C. Fly Ash: ASTM C 618, Type F.

D. Normal Weight Aggregates: ASTM C 33, and as herein specified. Provide aggregates form a single source for exposed concrete.
   1. For exterior exposed surfaces, do not use fine or coarse aggregates containing spalling-causing deleterious substances.
   2. Local aggregates not complying with ASTM C 33 but which have shown by special test or actual service to produce concrete of adequate strength and durability may be used when acceptable to Architect/designer.

E. Water: Drinkable.

F. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.

SECTION 03310
CONCRETE

1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

a. "Air-Mix"; Euclid Chemical Co.
b. "SikaAer"; Sika Corp.
c. "MB- VR or MB-AE"; Master Builders.
d. "Darex AEA" or "Daravair"; W.R.Grace.
e. "Edoco 2001 or 2002"; Edoco Technical Products.
f. "Air- Tite"; Gifford-Hill/American Admixtures.

G. Water-Reducing Admixture: ASTM C 494, Type A, and Containing not more than 0.1 percent chloride ions.

1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

2. Products: Subject to compliance with requirements, provide one of the following:

a. "WRDA A 64.
b. "PSI N"; Gifford-Hill/American Admixtures.
c. “Eucon WR – 75”; Euclid Chemical Co.
d. "Eucon WR- 75"; Euclid Chemical Co.
d. "Pozzolith Normal"; Master Builders.
e. "Plastocrete 160"; Sika Chemical Corp.
f. "Chemtarad"; Chern-Masters Corp.
g. "Pro-Kete-N"; Protex Industries, Inc.

H. High-Range Water-Reducing Admixture (Super Plasticizer): ASTM C 494, Type F or Type G and containing not more than 0.1 percent chloride ions.

1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

a. "ADVA 195 Highrange W.R.
b. "PSP"; Protex Industries, Inc.
c. "Super P"; Anti-Hydro.
d. "Sikament"; Sika Chemical Corp.

e. "Mighty 150"; ICI Americas Corp.
f. "Eucon 3 7"; Euclid Chemical Co.
g. "PSI Super"; Gifford-Hill.
h. "Rheobuild"; Master Builders.

SECTION 03310
CONCRETE

I. Water-Reducing, Non-Chloride Accelerator Admixture; ASTM C 494, Type E, and containing not more than 0.1 percent chloride ions.
1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following.
2. Products: Subject to compliance with requirements, provide one of the following:
a. "Accelquard 80"; Euclid Chemical Co.
b. "Pozzolith High Early"; Master Builders.
c. "Gilco Accelerator"; Gifford- Hill/American Admixtures.

J. Water-Reducing, Retarding Admixture: ASTM C 494, Type D, and containing not more than 0.1 percent chloride ions.
1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
a. "Edoco 20006"; Edoco Technical Products.
b. "Pozzolith Retarder"; Master Builders.
c. "Eucon Retarder 75"; Euclid Chemical Co.
d. "Daratard"; W .R. Grace
e. "PSI R"; Gifford-Hill/American Admixtures.
f. "Plastiment"; Sika Chemical Co.
g. "Protard"; Protex Industries, Inc.

K. Prohibited Admixtures: Calcium chloride thyocyanates or admixtures containing more than 0.1 percent chloride ions are not permitted.

2.04 RELATED MATERIALS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following.

1. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
    a. AFCO Products.
    b. The Burke Co.
    c. Edoco Technical Products.
    d. Greenstreet Plastic Products.
    e. Harbour Town Products.
    f. W. R. Meadows.
    g. Progress Unlimited.
    h. Schleigel Corp.

SECTION 03310
CONCRETE

    i. Vinylex Corp.

B. Granular Base: Evenly graded mixture of fine and coarse aggregates to provide, when compacted, a smooth and even surface below slabs on grade.

C. Non-Shrink Grout: CRD-C 621, factory pre-mixed grout.
    1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

    2. Products: Subject to compliance with requirements, provide one of the following:
        a. Non-metallic
            1) "Set Grout": Master Builders:
            2) "Sonogrout"; Sonnebom-Rexnord.
            3) "Euco-NS"; Euclid Chemical Co.
            4) "Supreme"; Gifford-Hill/ American Admixtures.
            5) "Crystex"; L & M Const. Chemical Co.
            6) "Sure-Grip Grout"; Dayton Superior Corp.
            7) "Homgrout"; A.C. Horn, Inc.
            8) "Five Star Grout"; U.S. Grout Corp.

    3. Products: Subject to compliance with requirements, provide one of the following:
        a. "Colorcron"; Master Builders.
        b. "Harcol Redi-Mixed"; Sonnebom-Contech.
        c. "Surflex"; Euclid Chemical Co.
        d. "Colorundum"; A.C. Horn, Inc.
        e. "Quartz Plate"; L & M Const. Chemical Co.
        f. "Lithochrome"; L.M. Scofield Co.
        g. "Floorcron"; Gifford-Hill/American Admixtures.

D. ~~Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. Per sq yd., complying with AASHTO M 182, Class. 2~~. NOT ALLOWED

E. Moisture-Retaining Cover: One of the following complying with ASTM C 171.
1. Waterproof paper.
2. Polyethylene film
3. Polyethylene-coated burlap.

F. ~~Liquid Membrane-Forming Curing Compound: Liquid type membrane- forming curing compound complying with ASTM C 309, Type I, Class A. Moisture loss not more than 0.055 gr./sq. cm. When applied at 200 sq. it/gal.~~ NOT ALLOWED

SECTION 03310
CONCRETE

1. ~~Available Products. Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following~~:
2. ~~Products: Subject to compliance with requirements, provide one of the following:~~
   ~~a. "Masterseal"; Master Builders~~.
   ~~b. "A-H 3 Way Sealer"; Anti-Hydro Waterproofmg Co~~.
   ~~c. "Ecocure"; Euclid Chemical Co~~.
   ~~d. "Clear Seal:'; A.C. Horn, Inc~~.
   ~~e. "Sealco 309"; Gifford-Hill/American Admixtures~~.
   ~~f. "J-20 Acrylic Cure"; Dayton Superior. g. "Spartan-Cote"; The Burke Co.~~
   ~~h. "Sealkure"; Toch Div. - Carboline~~.
   ~~i. "Kure-N-Seal"; Sonnebom-Rexnord~~.
   ~~j. "Polyclear"; Upco Chemical/USM Corp.~~
   ~~k. "L&M Cure"; L & M Construction Chemicals~~.
   ~~l. "Klearseal"; Setcon Industries~~.
   ~~m. "LR-152"; Protex Industries~~.
   ~~n. "Hardtop"; Gifford-Hill~~.

G. Underlayment Compound: Freeflowing, self-leveling, pumpable cementitious base compound.
1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following.
2. Products: Subject to compliance with requirements, provide one of the following:
   a. "Flo- Top"; Euclid Chemical Co.
   b. "ACD Pourable Underlayment"; ACD International,Inc.

c. "Thoro Underlayment Self-Leveling"; Thor System Products.

H. Bonding Compound: Polyvinyl acetate or acrylic base.
1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
3. Polyvinyl Acetate (Interior Only):
   a. "Euco Weld"; Euclid Chemical Co.
   b. "Weldcrete"; Larsen Products Corp.
4. Acrylic or Styrene Butadiene:
   a. "J-40 Bonding Agent"; Dayton Superior Corp.
   b. "Everbond"; L & M Construction Chemicals.
   c. "Hornweld"; A.C. Horn, Inc.
   d. "Sonocrete"; Sonneborn-Rexnord.

SECTION 03310
CONCRETE

e. "Acrylic Bondcrete"; The Burke Co.
f. "SBR Latex"; Euclid Chemical Co.
g. "Daraweld C"; W. R. Grace

I. Epoxy Adhesive: ASTM C 881, two component material suitable for use on dry or damp surfaces. Provide material "Type", "Grade", and "Class" to suit project requirements.
1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:
   a. "Thiopoxy"; W. R. Grace
   b. "Epoxtite"; A.C. Horn, Inc.
   c. "Edoco 2118 Epoxy Adhesive"; Edoco Technical Prod.
   d. "Sikadur Hi-Mod"; Sika Chemical Corp.
   e. "Euco Epoxy 452 or 620"; Euclid Chemical Co.
   f. "Patch and Bond Epoxy"; The Burke Co.
   g. "Concresive 1001"; Adhesive Engineering Co.

2.05 PROPORTIONING AND DESIGN OF MIXES

A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. If trial batch method used, use an independent testing

facility acceptable to Architect/designer for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing

B. Submit written reports to Architect/designer and Structural Engineer of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed by Architect/designer.

C. Design mixes to provide normal weight concrete with the following properties, as indicated on drawings and schedules.

1 3000 psi 28-day compressive strength, W/C ratio, 0.58 maximum (non-air-entrained), 0.46 maximum (air-entrained).
2. 2500 psi 28-day compressive strength as per manufacturer recommendations.

SECTION 03310
CONCRETE

D. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Architect/designer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect/designer before using in work. Any changes must be approved by YA Sand and Rock

E. Admixtures:
1. Use water-reducing admixture or high range water-reducing admixture (super plasticizer) in concrete as required for placement and workability.
2. Use non-chloride accelerating admixture in concrete slabs placed at ambient temperatures below 50 deg F (10 deg. C).
3. Use high-range water-reducing admixture in pumped concrete, concrete for industrial slabs, architect/designerural concrete, parking structure slabs, concrete required to be watertight, and concrete with water/cement ratios below 0.50.
4. Use air-entraining admixture in exterior exposed concrete, unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point

of placement having total air content with a tolerance of plus-or- minus 1-1/2 percent within following limits:

a. Concrete structures and slabs exposed to freezing and thawing, deicer chemicals, or subjected to hydraulic pressure.
   1) 4.5 percent (moderate exposure); 5.5 percent (severe exposure) 1-1/2" max. aggregate. 4.5 percent (moderate exposure); 6.0 percent (severe exposure) 1" max aggregate.
   2) 5.0 percent (moderate exposure); 6.0 percent (severe exposure) 3/4" max aggregate.
   3) 5.5 percent (moderate exposure); 7.0 percent (severe exposure) 1/2" max. aggregate.

b. Other Concrete (not exposed to freezing, thawing, or hydraulic pressure): 2 percent to 4 percent air.

SECTION 03310
CONCRETE

5. Use admixtures for water-reducing and set-control in strict compliance with manufacturer's directions.

F. Water-Cement Ratio: Provide concrete for following conditions with maximum water-cement (W/C) ratios as follows:
   1. Subjected to freezing and thawing; W/C 0.50.
   2. Subjected to deicers/watertight; W/C 0.45.
   3. Subjected to brackish water, salt spray, or deicers; W/C 0.40.

G. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
   1. Ramps, slabs, and sloping surfaces: Not more than 3".
   2. Reinforced foundation systems: Not less than 3" and not more than 5".
   3. Concrete containing HRWR admixture (super-plasticizer): Not more than 7" after addition of HRWR to site-verified 2" - 3" slump concrete.
   4. Other concrete: Not less than 1" nor more than 5".

2.06 CONCRETE MIXING

A. Job-Site mixing: Mix materials for concrete in appropriate drum type batch machine mixer. For mixers of one cu. yd., or smaller capacity, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released. For mixers of capacity larger than one cu yd., increase minimum 1-1/2 Minutes of mixing time by 15 seconds for each additional cu. Yd., or fraction thereof.

B. Provide batch ticket for each batch discharged and used in work, indicating project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.

C. Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as herein specified.

B. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C 94 may be required.

C. Mix concrete dye as per manufacturer’s recommendations.

SECTION 03310
CONCRETE

PART 3 EXECUTION

3.01 GENERAL

A. Verify that compaction of building pad is complete and approved prior to excavating for footings. Excavate to the established lines and grades. Cut off bottom of trenches level, and remove all loose soil. Where soft spots are encountered, remove all defective material and replace with concrete.

B. Coordinate the installation of joint materials with placement of forms and reinforcing steel.

C. Prior to pouring concrete slabs, floors, etc. on existing concrete slabs, floors, approval must be granted from owner to determine site condition.

3.02 PLACING AGGREGATE BASE COURSE (ABC)

TO BE PURCHASED FROM YAVAPAI APACHE SAND AND ROCK

A. Carefully place the specified ABC in areas to receive concrete slabs on grade, uniformly 4" thick (6" thick under driveways) and providing all required transition planes. Compact to 95% max. density.

3.03 FORMS:

A. Design, erect, support, brace, and maintain formwork to support vertical and lateral, static, and dynamic loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances comply with ACI 347.

B. Design formwork to be readily removable without impact, shock, or damage to cast-in-place concrete surfaces and adjacent materials.

C. Construct forms to sizes, shapes, lines, and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.

SECTION 03310
CONCRETE

D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and for easy removal.

E. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.

F. Chamfer exposed comers and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

G. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.

H. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete is placed. Retightening forms and bracing after concrete placement is required to eliminate mortar leaks and maintain proper alignment.

3.04 PLACING REINFORCEMENT:

A. Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars" for details and methods of reinforcement placement and supports, and as herein specified.
1. Avoiding cutting or puncturing vapor retarder during reinforcement placement and concreting operations.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.

SECTION 03310
CONCRETE

C. Accurately position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.

D. Place reinforcement to obtain at least minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

3.05 JOINTS

A. Construction Joints: Locate and install construction joints as indicated or, if not indicated, locate so as not to impair strength and appearance of the structure, as acceptable to Architect/designer. Area between joints shall not exceed 400 S.F..

B. Provide keyways at least 1-1/2" deep in construction joints in walls, slabs, and between walls and footings; accepted bulkheads designed for this purpose may be used for slabs.

C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints, except as otherwise indicated.

D. Isolation Joints in Slabs-on Ground: Construct isolation joints in slabs-on- ground at points of contact between slabs-on-ground and vertical surfaces, such as column pedestals, foundation walls, and elsewhere as indicated.
1. Joint filler and sealant materials are specified in Section 07920 of these specifications.

E. Construction Joints: Clean and roughen surface of concrete and remove laitance. Wet concrete surface and flush with neat cement grout before placing additional concrete.

NOTE. **In slabs with saw cuts, to be cut the following day**. Saw cuts to be ¼”inch in width by 1/2”in depth. POST TENSION slabs are not to be cut.

SECTION 03310
CONCRETE

F. Control Joints: Provide control joints where shown on plans, 1/4" wide joint x 1/2" deep, minimum. Saw after concrete has set sufficiently to make cut with slight raveling. Saw concrete poured in the morning the following day. Alternate method may be used. Install 1/8" x 2" Asphalt Hardboard Dummy Joint manufactured by W.R. Meadows, Inc. or Zicap control joint former 1/2" size manufactured by Greenstreak Plastic Products.

G. If joint pattern not shown, provide joints not exceeding 12' each direction
   1. Joint sealant material is specified in Section 07920 of these specifications.

H. Expansion Joints: Provide expansion joints between walks and driveways; between building foundation and exterior abutting slabs. Joint to finish 1/8" below slab surface.

3.06 INSTALLATION OF EMBEDDED ITEMS

A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in- place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto.

B. Install reglets to receive top edge of foundation sheet waterproofing, and to receive thru-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, relieving angles, and other conditions.

C. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units sufficiently strong to support types of screed strips by use of strike-off templates or accepted compacting type screeds.

3.07 PREPARATION OF FORM SURFACES

A. Clean re-used forms of concrete matrix residue, repair and patch as required to return forms to acceptable surface condition.

B. Coat contact surfaces of forms with a form-coating compound before reinforcement is placed.

SECTION 03310
CONCRETE

C. Thin form-coating compounds only with thinning agent of type, amount, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.

D. Coat steel forms with a non-staining, rust-preventative form oil or otherwise protect against rusting. Rust-stained steel formwork is not acceptable.

3.08 CONCRETE PLACEMENT

A. Pre-placement Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast- in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where form coatings are not used.

1. Apply temporary protective covering to lower 2' of finished walls adjacent to poured floor slabs and similar conditions, and guard against spattering during placement.

B. Comply with ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete", and as herein specified.

C. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation.

D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.

E. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI 309.

SECTION 03310
CONCRETE

F. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6" into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion' limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

G. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.

H. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.

I. Bring slab surfaces to correct level with straightedge and strikeoff. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.

J. Maintain reinforcing in proper position during concrete placement operations.

K. Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306 and as herein specified.

L. When air temperature has fallen to or is expected to fall below 40 deg. F (4 deg. C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg. F (10 deg. C), and not more than 80 deg. F (27 deg C) at point of placement.

M. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen sub grade or on sub grade containing frozen materials.

N. Do not use calcium chloride, salt, and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix designs.

SECTION 03310
CONCRETE

O. Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.

P. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 deg. F (32 deg. C). Mixing water may be chilled, or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water. Use of liquid nitrogen to cool concrete is Contractor's option.

Q. Cover reinforcing steel with water soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.

R. Fog spray forms, reinforcing steel, and sub grade just before concrete is placed.

S. Use water-reducing retarding admixture (Type D) when required by high temperatures, low humidity, or other adverse placing conditions.

3.09 FINISH OF FORMED SURFACES

A. Rough Form Finish: For formed concrete surfaces not exposed-to-view in the finish work or by other construction, unless otherwise indicated. This is the concrete surface having texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4" in height rubbed down or chipped off.

B. Smooth Form Finish: For formed concrete surfaces exposed-to view, or that are to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, damp proofing, veneer plaster, painting, or other similar system. This is as-cast concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with fins or other projections completely removed and smoothed.

C. Smooth Rubbed Finish: Provide smooth rubbed finish to scheduled concrete surfaces, which have received smooth form finsh treatment, not later than one day after form removal.

SECTION 03310
CONCRETE

D. Moisten concrete surfaces and rub with carborundum brick or other abrasive until a uniform color and texture is produced. Do not apply cement grout other than that created by the rubbing process.

E. Grout Cleaned Finish: Provide grout cleaned finish to scheduled concrete surfaces which have received smooth form finish treatment.

F. Combine one part portland cement to 1-1/2 parts fine sand by volume, and mix with water to consistency of thick paint. Proprietary additives may be used at Contractor's option. Blend standard portland cement and white portland cement, amounts determined by trial patches, so that final color of dry grout will match adjacent surfaces.

G. Thoroughly wet concrete surfaces and apply grout to coat surfaces and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.

H. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike- off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.10 MONOLITHIC SLAB FINISHES

A. After placing driveways, sidewalks, patios, and porches plane surface to tolerances for floor flatness (FF) of 15 and floor levelness (FL) of 13. Slope surfaces uniformly to drains where required. After leveling, roughen surfaces before final set, with stiff brushes, brooms or rakes.

B. Float Finish: Apply float finish to monolithic slab surface to receive trowel finish. To finish smooth with power trowel.

SECTION 03310
CONCRETE

C. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to tolerances of FF 18 - FL 15. Cut down high spots and fill low spots. Uniformly slop surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

D. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin film finish coating system.

E. After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with surface leveled to tolerances of FF 20 - FL 17. Grind smooth surface defects which would telegraph through applied floor covering system.

F. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, apply trowel finish as specified, then immediately follow with slightly scarifying surface by fine brooming.

G. Non-Slip Broom Finish: Apply non-slip broom finish to exterior concrete driveways, platforms, steps, and ramps, and elsewhere as indicated.

H. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect/designer before application.

I. ~~Chemical-Hardner Finish: Apply chemical-hardener finish to interior concrete floors where indicated. Apply liquid chemical-hardener after complete curing and drying of the concrete surface. Dilute liquid hardener with water (parts of hardener/water as follows), and apply in 3 coats; first coat, 1/3-strength, second coat, 1/2-strength; third coat 2/3-strength. Evenly apply each coat, and allow 24 hours for drying between coats.~~

J. ~~Apply proprietary chemical hardeners, in accordance with manufacturer's printed instructions.~~

K. ~~After final coat of chemical-hardener solution is applied and dried, remove surplus hardener by scrubbing and mopping with water.~~

SECTION 03310
CONCRETE

L. Non-slip Aggregate Finish: Apply non-slip aggregate finish to concrete stair treads, platforms, ramps, sloped walks, and elsewhere as indicated.

M. ~~After completion of float finishing, and before starting trowel finish, uniformly spread 25 lbs. of dampened non-slip aggregate per 100 sq. ft. of surface. Tamp aggregate flush with surface using a steel trowel, but do not force below surface. After broadcasting and tamping, apply trowel finishing as herein specified~~.

N. ~~After curing, lightly work surface with a steel wire brush, or an abrasive stone, and water to expose non-slip aggregate~~.

3.11 CONCRETE CURING AND PROTECTION:

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.

C. Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.

D. Curing Methods: Perform curing of concrete by curing and ~~sealing compound~~, by moist curing, by moisture- retaining cover curing, and by combinations thereof, as herein specified.

E. Provide moisture curing by following methods.
   1. Keep concrete surface continuously wet by covering with water.
   2. Continuous water-fog spray.
   3. Covering concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping

continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4" lap over adjacent absorptive covers.

F. Provide moisture-cover curing as follows:
1. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

SECTION 03310
CONCRETE

G. ~~Provide curing and sealing compound to exposed interior slabs and to exterior slabs, walks, and curbs, as follows~~:
1. ~~Apply specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours). Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.~~

H. Do not use membrane curing compounds on surfaces which are to be covered with coating material applied directly to concrete, liquid floor hardener, waterproofing, damp proofing, membrane roofing, flooring (such as ceramic or quarry tile, glue-down carpet), painting, and other coatings and finish materials, unless otherwise acceptable to Architect/designer.

I. ~~Curing Unformed Surfaces: Cure unformed surfaces, such as slabs, and other flat surfaces by application of appropriate curing method.~~

J. Final cure concrete surfaces to receive ~~liquid floor hardener~~ or finish flooring by use of moisture-retaining cover, unless otherwise directed.

K. ~~Sealer and Dustproofer: Apply a second coat of specified curing and sealing compound only to surfaces given a first coat~~.

3.12 REMOVAL OF FORMS

A. Formwork not supporting weight of concrete, such as sides, walls, and similar parts of the work, may be removed after cumulatively curing at not less than 50 deg. F (10 deg. C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be

damaged by form removal operations, and provided curing and protection operations are maintained.

B. After the forms are removed, back-fill and compact (with subsoil fill, minimum 95 percent of maximum dry density) in areas not under building or pavement areas per Section 02223- 310 Backfill.

3.13 RE-USEOFFORMS

A. Clean and repair surfaces of forms to be re-used in work. Split, frayed delaminated, or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.

SECTION 03310
CONCRETE

B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to Architect/designer.

3.14 MISCELLANEOUS CONCRETE ITEMS

A. Filling-In: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with comers, intersections, and terminations slightly rounded.

C. Grout base plates and foundations as indicated, using specified non-shrink grout. Use non-metallic grout for exposed conditions, unless otherwise indicated.

3.15 CONCRETE SURFACE REPAIRS:

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms when acceptable to Architect/designer.

B. Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete but, in no case to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.

C. For exposed-to view surfaces, blend white portland cement and standard portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

D. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect/designer. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins

and other projections on surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.

E. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.

F. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slops, in addition to smoothness using a template having required slope.

G. Repair finished unformed surfaces that contain defects which affect durability of concrete. Surface defects, as such, include crazing, cracks in excess of 0.01" wide or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets, and other objectionable conditions.

H. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.

I. Correct low areas in unformed surfaces during or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used when acceptable to Architect/designer.

J. Repair defective areas, except random cracks and single holes not exceeding 1" diameter by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4" clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

K. Repair isolated random cracks and single holes not over 1" in diameter by dry-pack method. Groove top of cracks and cut-out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix dry-pack, consisting of one part portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Place dry-pack after bonding compound has dried. Compact dry-pack mixture in place and finish to match adjacent

concrete. Keep patched area continuously moist for not less than 72 hours.

L. Perform structural repairs with prior approval of Architect/designer or Structural Engineer for method and procedure, using specified epoxy adhesive and mortar .

M. Repair methods not specified above may be used, subject to acceptance of Architect/designer.

N. Underlayment Application: Leveling of floors for subsequent finishes may be achieved by use of specified underlayment material.

3.16 QUALITY CONTROL TESTING DURING CONSTRUCTION:

A. The Owner will employ a testing laboratory to perform tests and to submit test reports.

B. Sampling and testing for quality control during placement of concrete may Include the following, as directed by Architect/designer.

C. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.

1. Slump: ASTM C 143; one test at point of discharge at beginning for each day's pour of each type of concrete; **additional tests required when concrete consistency seems to have changed**.

2. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231 pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.
3. Concrete Temperature: Test hourly when air temperature is 40 deg F (4 deg C) and below, and when 80 deg. F (27 deg C) and above; and each time a set of compression test specimens made.
4. Compression Test Specimen: ASTM C 31; one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.
5. Compressive Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yds. plus additional sets for each 50 cu. yds. over and above the first 25 cu. yds. of each concrete class placed in anyone day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
6. When frequency of testing will provide less than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.

7. When total quantity of a given class of concrete is less than 50 cu. yds., strength test may be waived by Architect/designer if, in his judgment, adequate evidence of satisfactory strength is provided.
8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in- place concrete.
9. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compression strength by more than 500 psi.

D. Test results will be reported in writing to Architect/designer, Structural Engineer and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

F. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect/designer. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests when unacceptable concrete is verified.

3.17 CLEAN-UP

A. General
   1. Periodically remove all debris, stags, trash, and other rubbish from site.
   2. Do not permit concrete wash-out residue to accumulate on paving, slabs, or in landscaped areas.

END OF SECTION

SECTION 04220
CONCRETE MASONRY UNITS

PART 1 GENERAL

1.01 SUBMITTALS

A. Certificates: Submit certification to the Architect/designer prior to delivery of concrete masonry units to jobsite, for color and style or design signed by Concrete Masonry Unit Manufacturer, stating that the concrete masonry units to be supplied:
   1. Shall meet the specified requirements for concrete masonry units for exterior building wall construction.
   2. Are suitable for proposed usage.

1.02 QUALITY ASSURANCE

A. Standards:
   1. The “Levels of Quality” Standard 107 of Arizona Masonry Guild (AMG) shall apply and by reference is hereby made a part of this Specification. Reference to Custom, Standard or Economy Specification shall be as defined in latest edition of AMG Standard 107.
   2. Comply with the requirements of ACI 530.1ASCE 6 “Specifications for Masonry Structures”, except as otherwise indicated.

B. Regulatory Requirements:
   1. Masonry materials and workmanship shall meet requirements of building codes which are applicable to jurisdiction in which Project is located.

C. Certifications: Concrete masonry units shall be supplied by a manufacturing participating in the Certified Block Program of the Arizona Masonry Guild.

1.03 DELIVERY, STORAGE AND HANDLING

A. Transport and handle masonry units in such a manner as to prevent chipping and breakage.

B. Keep free of stain or other damage.

C. Replace damaged material at no cost to Owner.

1.04 PROJECT/SITE CONDITIONS

A. Field Measurements:

1. Verify measurements shown on Drawings by taking field measurements.

SECTION 04220
CONCRETE MASONRY UNITS

2. Proper fit and attachment of concrete masonry units is required.

1.05 SCHEDULING AND SEQUENCING

A. Coordination: Coordinate with other Trades whose Work relates to concrete masonry unit installation for placing required blocking, backing, furring, conduits and other items.

PART 2 PRODUCTS

2.01 MATERIALS

A. General Requirements for Concrete Masonry Units:

1. Concrete masonry units shall meet ASTM C90 requirements except that when CMU will be exposed in final construction, ASTM C90-00, paragraph 7.2.1 shall be modified to read: "Three percent of a shipment containing chips not larger than ½ inch in any dimension, or cracks not wider than 0.02 in. and not longer than 10% of the nominal height of the unit is permitted." Linear shrinkage of units shall not exceed 0.065 percent.

The following requirement added since ASTM C90 is a DELIVERY specification only, that is, once the units have been delivered to the site there are no requirements that the unit be installed in the wall in the same condition as it was when delivered.

2. Units shall be in the same condition in wall as they were upon delivery.
3. Unit sizes shall be as shown on drawings.
4. Texture and color shall be consistent for all units provided for exposed walls. Range of texture and color shall be within that shown by samples reviewed by Architect/designer.

5. Surface of units shall be clean and free from dirt when laid in walls. Chipped corners and edges of concrete masonry probably cause more distress between Builder and Owner than any other single item.
6. Provide special block sizes and shapes required or as shown on Drawings.

B. Hollow CMU Classifications: The following requirements shall apply to all shapes, colors, textures, and sizes of CMU provided.

SECTION 04220
CONCRETE MASONRY UNITS

1. Lightweight Units: Weighing less than 105 lbs. per cubic foot and manufactured from volcanic scoria aggregate per ASTM C331.
2. Medium weight units: Weighing 105 lbs. per cubic foot to less than 125 lbs. per cubic foot and manufactured from a combination of volcanic scoria aggregate conforming to ASTM C331 and sand conforming to ASTM C33.
3. Normal weight units: Weighing 125 lbs. per cubic foot or more and manufactured with sand conforming to ASTM C33.

C. Standard Smooth Faced CMU:
1. Manufacturer's standard smooth faced units.

D. Accessory Units: Provide units as required for window sills and jambs, doors, control joints, bond beams, lintels, pilaster, caps and other locations as indicated on Drawings with a minimum of block cutting. Accessory units shall match adjacent unit color and texture unless noted otherwise.

2.03 ACCESSORIES

A. Joint Reinforcing: Joint reinforcing in accordance with requirements of IBC 2003, Chapter 21.

B. Reinforcing Steel: See General Structural Notes.

C. Mortar and Grout: Natural Clay Mortar; see General Structural Notes on Drawings for Grout.

D. Sheet Metal Flashings: See Section 07600. Furnish shapes in accordance with project requirements and NCMA TEK 19-2A, 19-4A and 19-5A.

E. Steel Lintels: As indicated or scheduled on Structural Drawings.

PART 3 EXECUTION

3.01 EXAMINATION

A. installer shall examine supporting structure and conditions under which unit masonry is to be installed, and notify Contractor, in writing, conditions detrimental to proper and timely completion of Work. Do not proceed with the installation of unit masonry Work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

SECTION 04220
CONCRETE MASONRY UNITS

B. Do not use units with chips, cracks, or other defects which might be visible in the finished Work unless otherwise acceptable to the Architect/designer.

C. Do not build on frozen Work; remove and replace unit masonry Work damaged by frost freezing.

D. Do not use frozen materials or materials mixed or coated with ice or frost. Do not lower freezing point of mortar by use of admixtures or anti-freeze agents, and do not use calcium chloride in mortar or grout.

3.02 PREPARTION

A. Protection: Protect sills, ledges, offsets and other projections from dropping mortar and grout.

3.03 ERECTION, INSTALLATION, APPLICATION

A. General Requirements for Concrete Masonry Walls:
   1. Workmanship:
      a. Provide Standard Level workmanship as defined by AMG Standard 107.
      b. Concrete masonry units which will be exposed in the finished work shall be treated as an architect/designer finish and shall be handled carefully to ensure that

chippages do not occur during handling and laying. Handling shall be minimized on the jobsite to eliminate chances for chippage.

2. Lay units in uniform and true courses, level and plumb to height indicated on Drawings.
3. Lay concrete unit masonry in such a way that cracks are not formed at time unit is placed in wall.
4. Units shall not be wetted before being used and shall be laid dry.
5. Adjusting Units:
   a. Avoid over-plumbing and pounding of corners and jambs to fit stretcher units after they are set in position.
   b. If position of unit is shifted after mortar has stiffened, or bond is broken or cracks are formed, re-lay unit in new mortar.

This paragraph is an example of requirements which are included in the engineering design of the project. Verify with Structural Engineer.

SECTION 04220
CONCRETE MASONRY UNITS

6. Bearings on Walls: Provide 3 courses of solid units or grouted hollow masonry units below steel bearing plates or beams bearing on walls. Extend bearings each side of contact with load as required to properly transfer loads into wall.
7. Openings: Provide openings in masonry walls where required or indicated. Steel lintels shall be provided unless otherwise noted. Where possible, the use of full masonry units should be incorporated into the building design. Not only will the use of full units avoid staining during the cutting procedure, but it will also prove to be more economical.
8. Cutting of masonry: When required, exposed block units shall be cut with a power driven Carborundum or diamond disc blade saw. When using “wet” cutting methods, clean water shall be used on exposed units.
9. Anchor masonry units facing against or abutting concrete members to concrete by use of dovetailed flat bar anchors inserted in slots built into concrete.
   a. Space anchors not more than 16 inches vertically and 24 inches horizontally.
   b. Maintain a space not less than ½ inch width between masonry and concrete members, keeping space free of

mortar or other rigid materials so as to permit differential movement.

B. Bonding:
1. Bond pattern shall be regular running bond unless indicated otherwise on the Drawings.
2. Bond shall be plumb throughout face of wall.

C. Bearing Wall Intersections:
1. Intersecting block bearing walls shall not be tied together in a masonry bond, except at corners.
2. One wall shall terminate at face of other wall with a control joint at intersection.
3. Tie intersecting wall together with a metal tie bar, ¼ inch X 1-1/4 inches X 2' 4" long with a 2 inch right angle bend at each end of bar, spaced vertically at 2 feet on center.
4. Bends at ends of tie bars shall be embedded in grouted cells.
5. Rake out vertical joint between intersecting walls to a depth of ¾ inch after mortar has stiffened.
6. Provide sealing of control joint as specified in Section 07900.

D. Non-Bearing Wall Intersections:
1. Tie non-bearing wall together with strips of metal lath or galvanized ¼ inch mesh hardware cloth placed across joint between 2 walls placed in alternate horizontal block courses.

SECTION 04220
CONCRETE MASONRY UNITS

2. Rake out vertical joint between intersecting walls to a depth of ¾ inch after mortar has stiffened.
3. Provide sealing of control joint as specified in Section 07900.

E. Joining of Work:
1. Where fresh masonry joins partially set masonry, the exposed surface of the set masonry shall be cleaned and lightly wetted so as to obtain the best possible bond.
2. Remove loose concrete block and mortar.
3. Stop-off a horizontal run of masonry by racking back ½ brick length in each course and, if grout is used, stopping the grout 4 inches back of the rack.
4. Toothing will not be permitted, except upon written approval of the Architect/designer.

F. Mortar Joints:
1. Joints shall be straight, clean and a uniform 3/8 inch thickness on exposed wall face and in accordance with NCMA TEK

19-2A.

2. Exposed vertical and horizontal joints shall be tooled when mortar is “thumbprint” hard with round or other approved jointer, slightly larger than the width of the joints to produce a dense, slightly concave or “V” tooled surface (as indicated on Drawings) which is well bonded to block at edges. Raked joints shall not be used on single wythe exterior building wall construction.
3. Joints shall be tooled flush at:
   a. Below grade and planter surfaces to receive damp proofing or waterproofing.
   b. Interior or exterior surfaces to receive ceramic tile, stucco, plaster or other finishes requiring flush joints that are to be concealed.
   The terms “solid fill’ and “full” when applied to the mortaring of hollow unit head joints means full through the thickness of the face shell only.
4. Solidly fill joints from face of unit to depth of face shell, except where specified otherwise.
5. Full bedding to be provided for first course on foundation and wherever maximum strength is required.
6. Butter vertical head joints well and shove these joints tight so that mortar bonds well to both units.
7. Full coverage to be provided on bed of face shells and webs surrounding cells to be filled.
8. Bee-holes or other open joints shall be filled and tooled with mortar while mortar is still fresh.

G. Control Joints:
1. Provide control joints, as detailed, at vertical masonry walls where such walls exceed 40 feet in length. In long length of walls, provide joints at approximately 24 feet on center or as detailed.
2. Control joints shall be continuous full height of walls.
3. At bond beams, control joints shall separate both block and grout; however, steel reinforcing shall be continuous.
4. Horizontal wire reinforcing shall not run through control joint.
5. Control joints shall not occur at wall corners, intersections, ends, within 24 inches of concentrated points of bearing or jambs or over openings unless specifically indicated on Structural Drawings.
   Preformed rubber or plastic control joints which finish flush with surface of wall are not recommended, since they cannot be calked.
6. Control joint materials shall be held back from finished surface as required to allow for sealant and back-up materials.

H. Horizontal Joint Reinforcing:
1. Place horizontal joint reinforcing every 16 inches vertically throughout wall construction.
2. Continuously reinforce first bed joint immediately above and below openings. Provide reinforcing in second bed joint above and below openings extends 2 feet beyond each side of opening.
3. Lap reinforcement a minimum of 6 inches at splices.
4. Cut and bend reinforcing at corners.

I. Vertical Reinforcing and Bond Beam Reinforcing:
1. Place in accordance with requirements of Drawings.
2. Vertical Reinforcement: Provide continuous reinforcing full height of wall at wall ends, corners, intersections, jambs of openings and each side of control joints. Vertical reinforcing shall match and lap dowels which are at top of foundation walls and precast concrete beams.
3. Bond Beams: Provide horizontal reinforcing of 2 bars in minimum 8 inch deep grouted continuous bond beam at roof and elevated floor lines.
4. Parapets: Provide horizontal reinforcing of 1 bar in minimum 8 inch deep grouted continuous bond beam at top of parapets.
5. Bond Beam and Parapet Reinforcing at Vertical Control Joints: Place bars continuous through control joint and wrap mastic tape around bars for 18 inches each side of control joint.
6. Bond Beam and Parapet Reinforcing at Corners and Wall Intersections: Provide bent bars to match reinforcing at corners and wall intersections.
7. Lap splices in reinforcing not less than 40 bar diameters for #7 and larger bars; 30 bar diameters for #6 and smaller bars.
8. Use spacers to position reinforcing steel in center of grout at center of wall as required by code.

J. Grouting:
1. Reinforcing steel is to be in place and inspected before grouting starts.
2. Vertical cells to be filled shall have vertical alignment to maintain a continuous cell area.
3. Keep cell to be grouted free from mortar.
4. Fill cells solidly with grout in lifts not to exceed 4 feet.
5. Grout may be poured by hand bucket, concrete hopper or through a grout pump.
6. Do not wet down grout space prior to pouring of grout.
7. Stop pours 1-1/2 inches below top of cell to from a key at pour points.

8. Grout shall be consolidated by mechanical vibration during placing before loss of plasticity in a manner to fill grout space. Grout pours greater than 12 inches shall be reconsolidated by mechanical vibration to minimize voids due to water loss. Grout pours 12 inches or less in height shall be mechanically vibrated, or rodded.
9. Grout barrier below bond beams shall be continuous wire lath or other approved material.
10. Grout beams over openings and bond beams in a continuous operation.
11. Solidly grout in place bolts, anchors and other items within wall construction.
12. Fully grout jambs and head of metal door frames connected to masonry. Filling of frames shall be done as each 2 feet of masonry is laid.
13. Use extreme care to prevent grout or mortar from staining face of masonry.
14. Immediately remove grout or mortar which is visible on face of masonry.

K. Provisions for Other Trades and Built-In Items:
1. Build in items required and indicated, including; but not limited to, reinforcing steel, anchors, flashings, sleeves, frames, structural steel, loose lintels, anchor bolts, nailing blocks, door and window frames and miscellaneous iron.

2. Enclosures for pipes, stacks, ducts and conduits:
   a. Construct slots, chases, cavities, and similar spaces as required.
   b. Where masonry is to enclose conduit or piping, bring it to proper level indicated and as directed.
   c. Cover no pipe, conduit chases or enclosures until advised that Work has been inspected and approved.

   Delete if insulation is not required. If insulation is included, edit the following to identify the section for the type selected.

L. Tolerances:
1. Standard Level of Quality: In accordance with AMG Standard 107.

M. Joint and Crack Control: In accordance with NCMA TEK 10-1.

N. Flashing: In accordance with NCMA TEK 19-2A, 19-4A,19-5A and 19-4.

O. Weep holes shall be provided above lintels and vertical obstructions as per manufacturer's flashing and weep hole diagrams.

3.04 ADJUSTING

A. Pointing of Mortar Joints:
1. Point and fill holes and cracks in exposed mortar joints.
2. Cut out defective mortar joints to a depth of at least ¼ inch.
3. When cutting is complete, remove dust and loose material by brushing or vacuuming.
4. Pre-hydrate mortar for pointing by mixing dry ingredients with only sufficient water to produce a damp mass of such consistency that it will retain its form when it is pressed into a ball with hands, but will not flow under trowel.
5. Allow mortar to stand for a period of not less than one hour nor more than 2 hours, after which remix with addition of sufficient water to produce satisfactory workability.
6. Pointing mortars shall be identical to adjacent mortar in similar joints and finish results shall match and be indistinguishable from mortar used.
7. Pre-moisten joint and apply mortar tightly.
8. Tool to match adjacent joints.
9. Moist cure for 72 hours.

B. Patching: If approved by Architect/designer, patching of exposed masonry walls shall be done at conclusion of general Work and shall conform as closely as possible to similar surrounding or adjoining Work.

3.05 CLEANING

A. Daily Cleaning: Keep walls clean. Soiled masonry from mortar and grout spills which will be exposed to view at completion of Project shall be cleaned immediately with stiff fiber brushes until wall is free of dropped or spattered mortar.

B. Remove scaffolding and equipment used in Work.

C. Clean up debris, refuse and surplus material and remove from premises.

3.06 PROTECTION

A. Furnish temporary protection for exposed masonry corners subject to injury.

B. Carefully cover tops of walls left incomplete at conclusion of day's Work with tarpaulins or other approved covering.

C. In hot and dry weather, protect masonry against too rapid drying.

D. Protect finished Work against freezing for a period of not less than 48 hours by means of enclosures, artificial heat, or such other protective methods as may be required.

END OF SECTION

SECTION 04400
FAUX STONE VENEER

PART 1 GENERAL

1.01 WORK

A. Provide and install "Natural Stone" Veneer and Accessories as shown on the Drawings and as specified herein.
   1. This work includes:
      ~~Fireplace Facing~~, exterior columns, and wainscoting.

1.02 QUALITY STANDARDS

A. All work must comply with applicable Codes and Regulations.

B. Provide experienced, well-trained Workers to complete the work as specified.

1.03 SUBMITTALS

A. Submit the following within 30 calendar days after receiving the Notice to Proceed.
   1. Stone Veneer Samples including 4 styles, colors or more and thicknesses for Architect/designer's approval.
   2. 24" X 24" mock-up showing materials, grout and coursing for Architect/designer to approve.

1.04 MATERIALS HANDLING

A. Handle materials with care to avoid damage in transport, unloading, moving and stacking.

B. Store decking materials as required to prevent damage.

PART 2 MATERIALS

2.01 STONE AND ACCESSORIES

A. Mortar as per ASTM C270:
1. Portland cement: Type I or II.
2. Aggregate: Clean, sharp sand.
3. Lime:
   a. Hydrated lime: Type S.
4. Water: Clean and potable
5. Color: Mortar Gray

SECTION 04400
FAUX STONE VENEER

B. Stone:
1. Stone Veneer – 1” to 6” in thickness.
2. Stone Veneer to be varied heights.

C. Galvanized Wall Ties at 12” o.c. each way in Frame Walls.

D. Use a Vapor Barrier minimum 15 lb. Felt Paper or equal when Stone Veneer is being laid against wood framing.

PART 3 CONSTRUCTION AND INSTALLATION

3.01 INSTALLATION

A. Lay Stone in a Random Broken Coursed Ashlar Pattern.
1. Lay Stone Masonry with grain in horizontal position.
2. Lay stone so that galvanized wall ties are embedded in horizontal bed joints.
3. Non-Staining Mortar is required.
4. Cover and protect work throughout construction.
5. Clean with mild soap and water and soft brush.
6. Never use acid cleaner.
7. Mortar joints to be 3/8” max. width, recessed, struck, and brushed clean.

3.02 REPAIR AND TOUCH-UP

A. After installation, inspect all work for improper installation or damage.

B. Repairs:
1. Repair or replace any work damaged during installation.
2. Repair work will be undetectable.

END OF SECTION

SECTION 06100
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Rough Carpentry includes, but is not necessarily limited to, wood structural and wood non-structural framing. Rough carpentry includes work which is not specified as part of other sections which is generally not exposed. Work in this section includes, but not necessarily limited to:
1. Dimensional Lumber Framing
2. Wood Framing
3. Roof Sheathing
4. Glue-laminated Timber Framing

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.
B. Prefabricated Trusses…… Section 06192.
C. Finish Carpentry …… Section 06200.
D. Gypsum Wallboard …….. Section 09250.

E. Painting…… Section 09900.
F. General Structural Notes……. See Drawings

1.03 QUALITY ASSURANCE

A. Comply with code requirements, 2012 International Residential Code.

B. Lumber Grading Rules and Wood Species to be in conformance with PS 20.

C. Grading rules of following associations apply to material furnished under this section:
1. West Coast Lumber Inspection Bureau (WCLIB).
2. Western Wood Products Association (WWPA).

D. Plywood Grading Rules: Softwood Plywood - Construction and Industrial, PS 1. See General Structural Notes, Sheet S-1.

E. Grade Marks:
1. Identify lumber and plywood by official grade mark.
2. Lumber: Grade stamp to contain symbol of grading agency certified by Board of Review, American Lumber Standards Committee, mill number or name, grade of lumber, species, or species grouping or combination designation, rules under which graded where applicable, and condition to seasoning at time of manufacture. Moisture content, S-Dry.

SECTION 06100
ROUGH CARPENTRY

3. Softwood Plywood: Conforming to PS 1 and American Plywood Association (AP A).

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Immediately upon delivery to job site, place materials in area protected from weather.

B. Store materials a minimum of six (6) inches above ground on framework or blocking, and cover with protective waterproof covering providing for adequate air circulation or ventilation.

D. Do not store seasoned materials in wet or damp areas.

PART 2 PRODUCTS

2.01 MATERIAL

A. Lumber:
1. Specified lumber dimensions are nominal.

2. Surface four sides (S4S), unless specified otherwise.
3. Framing lumber: Douglas Fir, or Hem-Fir: (S-Dry or kiln dried to 19% moisture content)

a. Light Framing:
   (i) General framing: Standard and better grade.
   (ii) Blocking, bracing, nailers, and general utility purposes: Standard and Better grade.

b. Studs: Stud grade.

c. Beams and posts: No.1, S4S, free of heart centers, selected for appearance. Edge knots, tom grain or wane will be rejected.

d. Glued laminated beams: AP A EWS Architect/designerural Grade

e. Pre-treated (Green) Lumber all plates in contact with concrete.

B. Plywood:
1. Exterior grade plywood where edge or surface is permanently exposed to weather.
2. Roof and wall sheathing: APA Rated Sheathing 1/2" Exposure 1,5 *ply.* No Particle Board or OSB Board Allowed.

C. Vapor retarder - Raven Industries Rufco- Wrap or Dupont Tyvek.

D. Bolts, Nuts and Washers

SECTION 06100
ROUGH CARPENTRY

1. Finish: Hot-dip galvanize to comply with ASTM A153 for work exposed to weather, in contact with ground, in corrosive environment and as otherwise shown; plain finish for other items.
2. Bolts: ASTM A307, grade A.
3. Nuts: ASTM A563
3. Washers: ASTM F436

E. See General Structural Notes, on Drawings for additional information.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that surfaces to receive rough carpentry materials are prepared to required grades and dimensions. Verify all dimensions and measurements on the job.

B. Note that a poor, uneven substrate cannot be improved or leveled with fascia, materials.

3.02 INSTALLATION

A. Framing: Refer to plans for details.
1. Exterior walls 2" x 6" studs at 16" o.c., with 15/32” or ½” inch OSB sheathing.
2. Interior walls 2" x 4" studs at 16" o.c.
Plumbing walls 2" x 6" studs at 16" o.c. Space partitions to suit tub size.

3. Plates and stud members:
a. Provide single pressure treated wood bottom plate and single top plates for partitions, two (2) inch thick by width of studs. Provide double top plate at all bearing walls and exterior walls.
b. Endnail studs to bottom plate and endnail to top plate.
c. Anchor bottom plates of interior partitions to concrete with power actuated fasteners (Ramset) 5/32" dill. 1" penetration @ 4'-0" o.c. and 6" from each end.
d. Triple studs at comers and partition intersections.
e. Frame Openings: Double studs and headers all openings.
f. Where studs are cut for pipes, use Simpson SS 1 stud shoes to reinforce. Where copper pipes are drilled through studs, protect pipes with Simpson NS-l nail stoppers.
g. Provide four (4) studs at beam supports.
h. Sill plates resting on concrete or masonry at exterior walls shall be treated fir or foundations grade redwood.

Section 06100
Rough Carpentry

4. Headers: Refer to Plan

a. Endnail headers to studs.

b. Maximum span:
(i) Spans to 3 ft. - 6 in. - Two 2" x 4".
(ii) Spans to 4 ft. - 6 in. - Two 2" x 6".
(iii) Spans to 6 ft. - 0 in. - Two 2" x 8".

B. Post and beam connections: Provide Simpson Column bases and column caps per detail.

C. Miscellaneous Framing:

1. General: All rough carpentry shall produce joints true, tight and well nailed. Select individual pieces for exposed framing so that knots and obvious defects will not show or interfere with placing bolts or making proper connections. Lumber may be rejected by the Architect/designer, whether or not it meets grading rules.
2. Bearing: Finish all bearing surfaces on which members are to rest to give sure, even and full support. Where framing members slope, notch as, required to give uniform bearing surface.
3. Framing for mechanical work: Frame members for passage of pipes and ducts to avoid cutting structural members. Reinforce framing members where damaged by cutting.
4. Truss Connections: Provide Simpson seismic ties H3 at end of each truss. Provide Simpson roof truss clips STC where top plates of partitions cross lower chord of truss.
5. Ridge blocking: Ridge tied in with roof sheeting.
6. Alignment: On all framing members to receive a finished wall or ceiling align the members to vary not more than 1/8" from adjacent members. Interior Walls-straight within 1/4" and plumb within 1/4" measured from floor to ceiling at comers and doors. Top plate on exterior bearing wall, straight within 1/4" in 10 ft. Check before setting trusses.
7. Fascias: Provide fascia boards in long lengths as possible. Miter comer where fascia board meets verge board at rake. Join fascia boards at *bearing* with scarf joint.

D. Roof and Wall sheathing:
   1. Plywood sheathing: Thickness to be 7/16” inch
      a. Install plywood with face grain perpendicular to supports, using panel with continuous end joints over two or more spans staggered between panels and locate over supports.
      b. Allow minimum space 1/16" between end joints and 1/8" at edge joints for expansion and contraction of panels.
      c. Support edge joints in roof sheathing by use of plyclips, entered.

SECTION 06100
ROUGH CARPENTRY

      d. Nailing shall be per General Structural Notes, See Drawings.

E. Install Ruco-wrap or Tyvek over plywood wall sheathing per manufacturer's Instructions.

F. Wood grounds and Blocking:

1. Provide wood blocking behind toilet accessories, mini blinds, door stops, towel bars, grab bars, and kitchen cabinets.
2. Block behind tub surrounds where grab bars are installed to support at least 250 lb. force. Block at tub filler and showerhead so that tub filler can be securely tightened and showerhead piping securely fastened. Install blocking so that the blocking fits tightly against the fiberglass.
3. Provide other blocking as indicated or required for a complete job.
4. Horizontal Blocking for grab bars to be centered at 34” from the top of the concrete slab using 2” x 6” solid wood material. Vertical Blocking to be installed valve side of shower or tub near outside edge starting 2’ft from floor to 6ft from floor using 2”x 6” solid wood material.

G. Nailing Schedule:

Connection
Top plate to stud, end nail…… 2-16d Stud to sole
Plate ……...-8d, toenail or 2-16d, end nail
Double studs, face nail…… 16d at 24" o.c.
Doubled top plate, face nail ……16d at 16" o.c.
Plates, laps and intersections, face nail……2-16d Header to stud
Toe nail…….3-8d or 2-160
Built-up comer studs……...…16d at 24" o.c. 1/2"
Plywood roof sheathing (to framing)……8d at 6”6"o.c.on edges
10d" o.c. at intermediate supports

(ALSO See Chapter 6 of the newest edition of the International Residential Code)

NOTE- Design trusses or provide framing in attic to allow for ½” osb to be

Installed to allow for foam insulation to be applied to living space side at garage wall

END OF SECTION

SECTION 06192
PREFABRICATED TRUSSES

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Pre-engineered wood trusses, supports, and bearings as shown on the drawings and as specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.

B. Rough Carpentry…… Section 06100.

C. General Structural Notes……See Drawings.

1.03 QUALITY ASSURANCE

A. Conform with applicable provisions of the National Design Specifications for Wood Construction published by the National Forest Products Association and Design Specifications for Metal Connected Wood Trusses published by the Truss Plate Institute.

1.04 SUBMITTALS

A. Design Analysis. Print out of computer design.

B. Shop Drawings:
1. Submit to Architect/YANTH prior to fabrication of truss components.
2. Note species, sizes, and stress grades of lumber to be used as members.
3. Show pitch, span, camber configuration, and spacing of trusses.
4. Indicate connector type, thickness, size, location and design value.
5. Illustrate bearing details.
6. Seal and signature of structural engineer.

C. Truss Fabricator's Instructions: Handling and erection instruction, including lift points:
1. Load Carrying Capacity: Certification by fabricator that trusses will sustain design loads at specified moisture content.

SECTION 06192
PREFABRICATED TRUSSES

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Handle prefabricated trusses per manufacturer's instructions.

B. Stock pile or store trusses in position acceptable to Architect, Designer and recommend by manufacturer.

C. Provide bearing supports and bracing to avoid bending and overturning of trusses.

D. Protect trusses from construction operations.

PART 2 PRODUCTS

2.01 MATERIALS

A. Lumber: Conform to published stress ratings of National Design Specification for Stress-Grade Lumber and its Fastenings, NFP A.

2.02 FABRICATION

A. Manufacture to tolerances recommended by Truss Plate Institute Quality Control Manual QCM.

B. **Design loads-dead load 16 psf, live load 20 psf, bottom chord dead load 5 psf., to carry weight of tile shingles.**

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that surfaces to receive trusses are free of irregularities and debris.

B. Do not proceed with installation until unsatisfactory conditions are corrected.

3.02 ERECTION

A. Hoist trusses into position with cables secured at designated lift points.

SECTION 06192
PREFABRICATED TRUSSES

B. Exercise care to keep out-of-plane bending of trusses to minimum.

C. Install temporary horizontal and cross bracing to hold trusses plumb and in safe condition until permanent bracing is installed.

D. Install permanent bracing and related components prior to application of loads to trusses.

E. Distribute construction loads to prevent overstressing of truss members.

SEE NOTE IN FRAMING REGARDING OSB INSTALLATION IN ATTIC

END OF SECTION

SECTION 06200
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Finish carpentry includes non-structural carpentry work exposed to view, which is not specified as part of other sections and not necessarily limited to:

1. Types of finish carpentry work in this section include:
   a. Exterior running and standing trim.
   b. Interior running and standing trim.
   c. Shelving.
   d. Closet rods.
   e. Fitting and installing all pre-hung wood doors and jambs.
   f. Installing all finish hardware. Door and Bath

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.

B. Rough Carpentry …… Section 06100.
C. Cultured Marble ……. ……. Section 06621.
D. Wood Doors ……. Section 08211.
E. Hardware and Specialties …….. Section 08710.
F. Wood Cabinets …… Section 12370.

1.03 QUALITY ASSURANCE

A. The quality standards of the Architect/designerural Woodwork Institute, Arlington, Virginia (AWI), shall apply and by referenced are made part of this section. Each piece of lumber shall bear official grade mark of Lumber Manufacturer's Association under those grading rules it is produced. Each piece shall be kiln dried and surfaced four sides, dressed in sizes to conform to requirements of grading authority. Moisture content shall meet requirements of AWI standards for southwestern states for interior and exterior, as applicable

SECTION 06200
FINISH CARPENTRY

B. Hardwood Lumber Standards: National Hardwood Lumber Association Rules (NHLA)

C. Softwood Lumber Standards: Grading rules, species and product data indicated.

D. Plywood Standard: Comply with PS 1/ANSI A199.1..

E. Woodworking Standard: Comply with specified provisions of the Architect/designerural Woodwork Institute (AWI) "Quality Standards"

F. Qualifications of personnel: Throughout progress of the work of this section, provide at lease one person who shall be thoroughly familiar with the specified requirements, completely trained and experienced in the necessary skills, and who shall be present at the site and shall direct all work performed under this Section.

1.04 JOB CONDITION

A. Do not install finish carpentry materials until building is closed in, doors in place, windows installed and the drywall joint tape is dry.

1.05 PRODUCT HANDLING

.

A. Protection: Use all means necessary to protect the materials of this Section before, during, and after installation, and to protect the work and materials of all other trades.

B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect/designer and at no
additional cost to the Owner.

PART 2 PRODUCTS

2.01 MATERIALS

A. Kiln dried and graded in accordance with Western Lumber Grading Rules:
1. Interior and exterior trim and base - C Select Douglas Fir or Pine.
2. Shelving - 3/4" thick, Particle Board
conforming to American National Standard for Mat-formed wood particleboard ANSI/A208.1. Provide 1/8" radius chamfer on exposed edges.

3. ~~Mantle – 6/4" Solid Oak with wood corbles and trim~~
4. ~~Hearth Oak Trim – ¾" Solid Oak~~

SECTION 06200
FINISH CARPENTRY

PART 3 EXECUTION

3.01 Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 INSTALLATION OF PREHUNG WOOD DOORS

A. Initial inspection of doors. Prior to start of installation of each door, carefully inspect the door and verify:
   1. That the door furnished is the proper door for the opening, as described on the Door Schedule in the Drawings.
   2. That the door is in sound condition, unblemished, without warp, twist, bow.

B. Placing frames:
Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. Shim for 1/8" clearance at head and jambs.

3.03 HARDWARE INSTALLATION

A. Install in strict accordance with manufacturer's instructions, is in proper condition, and functions in intended manner.

B. Installing: For each door, verify the hardware type as described in the Hardware Section 08700 and verify that hardware actually supplied is the hardware specified.

C. Anchoring: Anchor all components firmly into position for long life under hard use. Use only the anchoring devices furnished with the hardware item, unless otherwise specifically directed.

3.04 INSPECTION, ADJUSTMENT

A. Inspect each item of installed finish hardware. Verify that each such item has been installed in strict accordance with the manufacturer's recommendations, is in proper, condition, and functions in its intended manner.

SECTION 06200
FINISH CARPENTRY

3.05 INSTALLATION OF WOOD TRIM

A. Remove all end splits and checks. Turn wane to back side of board. Discard all unsound, warped, bowed, twisted material.

B. Finish millwork to be free of machine or tool marks. Remove saw cut whiskers. Install trim and base in as long lengths as possible. Miter all corners, set trim straight, plumb and level, closely fitted joints tight. Nail at 16" o.c. with finish nails, countersink and putty.

C. Break sharp comers of all trim by lightly sanding and rounding.

Note need to fir out and install ruff sawn 2x4 wood trim at exterior front and back doors for future security screen doors.

END OF SECTION

SECTION 06621
CULTURED MARBLE

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Provide and install pre-fabricated simulated cultured marble sinks with countertops, shower pans and surrounds as shown on drawings and as specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.

B. Finish Carpentry……. Section 06200.

1.03 QUALITY ASSURANCE

Manufacture certified by International Cost Polymer Association. Provide cultured marble units produced by one manufacturer including fastenings.

1.04 SUBMITTALS

A. In addition to manufacturer's products data and installation instructions, submit the following:
1. Samples of materials and finishes for architect/designer approval.
2. Colors: Submit samples for Architect/designer selection. Color or as selected by the Architect/designer.
3. Submit shop drawings or cultured marble items to architect/designer for approval.

PART 2 PRODUCTS

2.01 CULTURED (SIMULATED) MARBLE

A. Manufacturer's standard cultured marble made by combining polyester resin with a filler of ground limestone and other manufacturer's standard filler components. Corian, ANR L & M Marble Co., or Architect/designer approved equal.

B. Provide gel coat to cultured marble to provide stain resistance and add stain resistance to the finish.

SECTION 06621
CULTURED MARBLE

C. Cultured Marble shall be 3/8" thick with eased to 1/4" radius edges and comers.

PART 3 EXECUTION

3.01 INSTALLATION

A. Attach cultured marble with manufacturer's standard construction adhesive or as recommended by manufacturer.

B. Caulk with acrylic latex sealant (to match cultured marble color).

C. Protection: Upon completion of sill installations, provide temporary protective covering. Maintain covering until construction has ended and project is near time of substantial completion.

END OF SECTION

SECTION 07213
BUILDING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. ~~Blanket type building insulation as shown on the drawings and as specified herein~~. Not used except at sound walls.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Special Conditions and General Requirements apply to the work specified in this section.

B. Rough Carpentry ……..….Section 06100.

C. Sealant and Caulking ……Section 07920.

1.03 SUBMITTALS

A. Submit samples clearly identified with manufacturer's name, brand name, R-value, and composition.

1.04 PRODUCT DELIVERY AND STORAGE

A. Deliver materials to project site in manufacturer's original packaging.

B. Clearly identify manufacturer, contents, brand name, applicable standard, and R-value. R-value to meet or exceed R-38 in attic under roof sheathing with ignition barrier, and R-19 in exterior walls

C. Protect against weather, condensation, and damage. D. Immediately remove damaged material from site.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Certain Teed

B. Demilec

C. Icynene

SECTION 07213
BUILDING INSULATION

2.02 MATERIALS

A. Minimum R-Value of **open cell foam** insulation:

1. Ceilings & attic separation walls R-38 except open porches, patios, and carports.
2. Exterior walls: R-19
3. Sound Walls: R-13 Kraft faced – 2X4 Sound Walls.
   R-19 Kraft faced – 2X6 Sound Walls.

B. Insulation Baffle Vents: Ampcor Model BV-24", coated water resistant fiberboard.

C. Polyurethane Foam at tub and shower units.

D. Sill Sealer: Dow Sill Seal, Ethafoam brand polyethylene foam, size 1/4" x 5-1/2". Or Non expanding foam around door jambs and windows.

E. Location of “Rock-Wool”

1. Walls between units are to be “Rock-Wool” fire proof insulation

PART 3 EXECUTION

3.01 INSPECTION

A. Examine areas scheduled to receive insulation to insure protection against inclement weather and other hazards and work of preceding trades is completed.

3.02 INSTALLATION

A. General:
1. Fit insulation snugly between framing.
2. Maintain integrity of insulation over entire area to be insulated.
3. Carefully cut and fit insulation around pipes, conduits, and other obstructions.
4. Patch and seal punctures, tears, or voids in batts or vapor barrier.

B. Faced Insulation:

1. ~~Staple facing flanges to bottom face of trusses at eight (8) inch centers, or closer as necessary to hold flanges tightly to framing members.~~
2. ~~Install foil-faced insulation with foil toward warm-in-winter side of assembly stapled to face of studs~~.

C. Insulation Batts: Staple or screw flanges to side of top chord of trusses to create air space for soffit vents at each vent location.

D. Sill Sealer: Install sill sealer system on top of concrete foundation under all exterior wall sill plates. In addition, provide one (1) row of silicon rubber sealant on each side of all exterior sill plates, per Section 07920.

E. *Face of insulation shall be in continuous contact with the Air Barrier (e.g. gypsum board) throughout. In locations without gypsum board Air Barrier, such as trusses above dropped soffit, Thermal-Ply or other suitable Air Barrier shall be installed. (installation shall be per the Arizona Department of Commerce, Energy Office recommendations*).

3.03 CLEAN UP

A. Remove and dispose of excess materials, litter, and debris; leaving work area in a clean condition.

END OF SECTION

SECTION 07510
Cool Tile Roofing to be used.

Min SRI Rating of not less than (29) for roof slopes greater than 2:12
Style to be square, flat and made out of light weight concrete color to be determined.
Underlayment to be Synthetic 30 year 6 month UV protection or better.

Roofing materials and Underlayment to be installed according to Manufacturers installation instructions

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. The Tile work is indicated on the drawings, but is not necessarily limited to as specified herein.
   1. Hot dip galvanized or aluminum fasteners.
   2. 2” inch metal drip edge.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.

B. Rough Carpentry …….. Section 06100.

C. Flashing and Sheet Metal ……Section 07600.

1.03 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver materials with manufacturer's labels intact and legible.

B. Store materials on raised platforms and protect with coverings at outdoor locations.

1.04 JOB CONDITIONS

A. Do not install underlayment or roof tiles on wet surfaces.

1.05 GUARANTEE

A. Materials: Guarantee against defects per manufacturer in writing.
B. Workmanship: Guarantee against defects for 2 years by Contractor.

1.06 SUBMITTALS:

A. Samples: 1. Roof tiles: Two of each style selected indicating full range of color. Submit to Architect/designer for Approval.

SECTION 07510
Cool Roof Tile

A. Submit Manufacturer's Literature. Material description and recommended installation procedures.

B. Extra Stock: 1 % of total shingles laid of each color/type and texture.

PART 2 PRODUCTS

2.01 FASTENERS

A. To be determined by manufacturer.

2.02 METAL DRIP EDGE

A. 2”inch 26 ga. per detail minimum.

PART 3 EXECUTION

3.01 INSPECTION

A. Assure that surfaces to which roofing material are to be applied are uniform, smooth, sound, clean, dry and free of irregularities.

B. Verify that installation of metal flashing has been completed.

C. Verify that work of other trades which penetrates roof deck has been completed.

D. Do not start work until unsatisfactory conditions are corrected.

3.02 APPLICATION

A. Install roofing and underlayment to Manufacturers installation Instructions including valley and other metal flashing materials. **All tiles to be nailed, and secured to roof sheathing.**

ADJUST AND CLEAN

3.03 A. Replace damaged tiles.

B. Remove excess tile not part of extra stock and debris from project site.

END OF SECTION

SECTION 07600
FLASHING AND SHEET METAL

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Flashings, sheet metal work and related items including, but not limited to:

1. Counterflashing at vertical surfaces.

2. Flashing at roof penetrations.

3. Gutters, Leaders and Fascia Wrap as noted on Drawings.

4. Edge flashing.

1.02 SUBMITTALS

A. Shop Drawings: Submit Drawings indicating type of material, gage, dimensions, profiles, locations where used, fastening and anchoring methods, joints, and provisions of expansion and contraction.

B. Samples: Submit samples of each type of pre-finished metal in selected color.

1.03 QUALITY ASSURANCE

A. Standards:

1. Comply with design and installation methods of SMACNA Architect/designerural Sheet Metal Manual.

2. Comply with the NRCA Roofing and Waterproofing Manual installation details.

1.04 DELIVERY, STORAGE AND HANDLING

A. Packing and Shipping: Deliver materials to site in Manufacturer's original unopened packaging with labels intact.

B. Storage: Adequately protect against damage while stored at the site.

C: Handling: Comply with Manufacturer's instructions.

PART 2 PRODUCTS

2.01 MATERIALS

SECTION 07600
FLASHING AND SHEET METAL

A. Pre-finished Metal:

1. Hot-dipped galvanized, ASTM A653 Structural Quality, Grade 40, G90 coating 24 gage core steel, or pre-finished Galvalume ASTM A792.

2. Finish: Full strength Kynar 500/Hylar 5000 Fluorocarbon coating, applied by the Manufacturer on a continuous coil coating line, with top side dry film thickness of 0.70 to - 0.90 mil over 0.25 to 0.35 mil prime coat, to provide a total dry film thickness of 0.95 to 1.25 mil.

   a. Bottom side: Coated with primer with a dry film thickness of 0.25 mil.
   b. Finish: Conform to all tests for adhesion flexibility, and longevity as specified by the Kynar 500 finish supplier.
   c. Color: As selected by Architect/designer from Manufacturer's full range of colors.

3. Strippable film: Liquid applied to top side of painted coil to protect finish during fabrication, shipping, and field handling.

B. Galvanized Steel:

1. ASTM A653, 24 gage minimum and as indicated, with G-60 coating.

2.02 ACCESSORIES

A. Reglets and Counterflashings: Fry Reglet Corporation, Type STX at stucco, Type SM at masonry and Concrete, or fabricated as indicated on Drawings. Provide prefabricated inside and outside reglet and counterflashing corners.

B. Solder: ASTM B32, 50/50 type.

C. Flux: FS O-F-506.

D. Sealant: As specified in Section 07900.

E. Plastic Cement: ASTM D4586.

F. Roofing Felt: ASTM D226, 15 pound type or 30 pound type.

G. Bituminous Coating: FS TT-C-494 or SSPC paint – 12, dry film 15 mils per coat.

H. Polyethylene: Black, 6 mi.

SECTION 07600
FLASHING AND SHEET METAL

I. Sheet Metal Fasteners: Pre-finished galvanized steel with soft neoprene washers at exposed fasteners. Where exposed in the finished work of prefinished metal, provide fasteners with prefinished heads matching prefinished metal.

J. Prefinished Metal Seam Sealers and Adhesives: As recommended by prefinishing metal manufacturer for waterproof and weather-resistant seaming and adhesive applications of flashing and sheet metal work.

2.03 FABRICATION

A. Fabricate sheet metal with lines, arris, and angles sharp and true, and plane surfaces free from objectionable wave, warp or buckle. Hem exposed edges to form a ½ inch wide hem on the side concealed from view.

B. Forming, anchoring, expansion and contraction details, shall conform to referenced quality standards.

C. Provide for thermal expansion of running trim, flashing, expansion joints, and other items exposed for more than 15 feet continuous length.

D. Fabricate cleats and starter strips of same material as sheet.

E. Form pieces in longest practical lengths, except form flashing and facias in 8 to 10 foot units.

F. Solder and seal metal joints or use seam sealer/adhesive as recommended by prefinished metal manufacturer. After soldering, remove flux. Wipe and wash solder joints clean.

G. Fabricate corners from one piece with minimum 18 inch long legs, with mitered corners: solder for rigidity, seal with sealant.

H. Fabricate flashings to allow toe to extend 2 inches over roofing. Return and brake edges.

I. Where prefabricated counterflashing and reglet system is used, form upper edge of counterflashing with and approved snap lock flange to engage reglet receiver and to provide a spring action at bottom edge against built-up flashing.

J. Flashing Pans: Form sheet metal pans 6 inch nominal square size, with 3 inch upstand, and 4 inch flanges. Fill pans watertight with plastic cement.

SECTION 07600
FLASHING AND SHEET METAL

2.04 FINISH

A. Shop prepare and prime exposed ferrous metal surfaces.

B. Backpaint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 1.5 mil.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Examine subsurfaces to receive Work and report detrimental conditions in writing to Architect/designer. Commencement of Work will be construed as acceptance of subsurfaces.

1. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.

2. Verify membrane termination and base flashings are in place, sealed, and secure.

B. Coordination: Coordinate with other Work which affects, connects with, or will be concealed by this Work.

B. Do not start sheet metal work until conditions are satisfactory.

3.02 INSTALLATION

A. Installation shall conform to NRCA and SMACNA manuals.

B. Expansion Seams: Maintain a watertight installation at expansion seams. Locate expansion seams as shown or if not shown, at the following maximum spacing for each general flashing use:

1. Flashing, expansion joints, gravel stops, and trim: At 10 foot intervals, 24 inches on each side of corners and intersections.
2. Sealant-type expansion joints: Where sealant-filled expansion joints are used, embed the hooked flanges of the joint members not less than 1 inch into the sealant. Form joints to completely conceal the sealant. When ambient temperature is moderate at the time of installation (40 to 70 degrees F.), set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant type joints at temperatures below 40 degrees F. Installation of sealant is specified in Section 07900.

SECTION 07600
FLASHING AND SHEET METAL

C. Where dissimilar materials abut, provide proper separation or protection to minimize the possibility of galvanic action.

D. Soldering:
1. Except where other methods of joining are indicated or specified, solder joints and connections of Sheet Metal Work.
2. Remove grease and dirt from metal surfaces to be joined.
3. Remove flux residue by scrubbing, neutralizing with ammonia or a 5 to 10 percent solution of washing soda, followed by a clear water rinse.
4. Assemble parts and solder using regular non-corrosive resin flux. Heat metal thoroughly to completely sweat solder through full contact area.

E. Reglets: Install reglets in masonry, concrete or stucco to receive flashings.

D. Counterflashing:
1. Provide metal counterflashing at top edges of built-up base flashings and at other locations indicated.
2. Lap end joints a minimum of 3 inches. Do not solder or weld joints. Make flashing continuous at angles. Counterflashing shall overlap base flashing a minimum of 4 inches, unless otherwise indicated.
3. Where counterflashing terminates in reglets, fasten flashing with lead wedges every 12 inches. Fill reglets continuously with synthetic rubber type sealant.
4. Lap drip edge over gutter and fascia wrap.

G. Facias:
1. Provide facias at exposed edges of built-up roofs and at eave/gable. Fabricate from 24 gage galvanized metal.

2. Form expansion joints between units with 6 inch wide back-up plate and cover plates formed to exact profile of gravel stop. Fill space between units and plates with sealant.
3. Extend flanges of gravel stop out on top of built-up roofing not less than 4 inches. Set in full bed of plastic cement. Spread full bed of plastic cement between sheets of lap. Nail 1 inch from back edge at 6 inches o.c. into wood nailer.

H. Copings:

1. Cover top of parapet walls where indicated with 24 gage galvanized metal coping formed to design shown. Before applying metal, cover top of wall or wood blocking with polyethylene.
2. Extend front edge of coping covering down over the lock into a previously placed continuous edge strip. Secure edge strips with nails spaced 12 inches apart.

SECTION 07600
FLASHING AND SHEET METAL

3. Join rear edge of coping covering to adjacent flashings as indicated.

I. Metal Edgings:

1. Provide metal edgings at exposed edges of built-up roofs. Provide drip edges at edge of fiberglass shingles. Fabricate from 24 gage galvanized iron, profile indicated.

2. Extend flanges of metal edgings out on top of built-up roofing or base flashing (as applicable) not less than 4 inches. Set in full bed of plastic cement. Spread full bed of plastic cement between sheets at laps. Nail flanges to wood nailer when nailers are under the membrane or flashing (as at roof edge or gravel stops). Nail as shown in the referenced quality standards.

J. Gutters and Leaders- 24 gage galvianized iron, profile as approved by Architect/designer

3.03 CLEANING

A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises. Leave Work in clean condition.

END OF SECTION

SECTION 07920
SEALANTS AND CAULKING

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Work includes, but is not necessarily, limited to, all sealants and joint treatment necessary to provide a positive barrier against passage of moisture and air, at all locations required and as described below. Install sealant at all exposed open joints on interior. Install sealant at all exterior joints or locations around perimeter or openings, expansion joints, between dissimilar materials as joints indicated.

1.02 DESCRIPTON:

A. The general provisions of the Contract, including the General Conditions. Special Conditions, and General Requirements apply to the work specified - in this section.

B. RELATED WORK SPECIFIED ELSEWHERE

1. Concrete Section 03310.

2. Painting Section 09900.

1.03 SUBMITTALS

A. Submit sample and manufacturer's specification of product.

1.04 JOB CONDITIONS

A. Do not install on wet surfaces.

PART 2 PRODUCTS

2.01 MATERIALS

A. DAP Alex, acrylic latex caulk, with silicone; Red Devil siliconized acrylic caulk; or approved equal, 25-year guarantee, paintable.

B. Solvents, cleaning agents and other accessory materials shall be as recommended by sealant manufacturer.

SECTION 07920
SEALANTS AND CAULKING

PART3 EXECUTION

3.01 CAULKING LOCATIONS

A. Caulking of surfaces to be painted shall be accomplished before finish painting is completed.

B. Provide caulking at all locations indicated or listed herein. This is not intended to be a complete list of location requiring caulking, but generally caulk all joints of dissimilar finishes and/or material. Caulk at all probable points of water infiltration.

C. Caulk perimeter of:
1. Exterior door frames and casing.
2. Aluminum sash.
3. Fiberglass tubs at floor.
4. All wood joints not fitting tightly.
5. Top edge of backs plash at kitchen counter and bath vanities.
6. Around all water closets at floor.
7. Wood base to floor.
8. Where ducts, pipes and wires penetrate exterior walls.
9. Exterior Control Joints
10. Exterior Expansion Joints
11. Joints at stucco and soffits
12. Around all tub and shower surrounds
13. Caulk base boards including between tile and base

D. Provide a solid bed of caulking compound for all exterior moldings, stops, louvers, etc.

3.02 PREPARATION OF SURFACES

A. Thoroughly clean all joints, removing all foreign matter such as dust, oil, grease, water, surface dirt and frost.

3.03 APPLICATION

A. Follow sealant manufacturer's instructions regarding surface preparation, priming and application procedure.

B. Apply sealant under pressure with hand or power actuated gun. Gun shall have nozzle of proper size and provide sufficient pressure to completely fill joints as detailed. Neatly point or tool all joint surfaces to provide contour indicated.

SECTION 07920
SEALANTS AND CAULKING

C. Clean adjacent surfaces free of sealant or soiling resulting from this work as work progresses. All finish work shall be left in a neat, clean condition.

D. All caulked joints shall be watertight and weathertight.

END OF SECTION

SECTION 08111
FIBERGLASS/ INSULATED METAL DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Work includes but not necessarily limited to fiberglass/ insulated doors as shown on drawings and as specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of he Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.

B. Rough Carpentry……..….. Section 06100.

C. Finish Carpentry ……..… Section 06200.

D. Sealants and Caulking …….. Section 07920.

E. Finish Hardware …… Section 08710.

F. Painting …… Section 09900.

1.03 SUBMITTALS

A. General: Comply with provisions of Section 01340.

B. Manufacturers' data: Within 45 calendar days after award of the Contract, submit:
1. Complete materials list of all items proposed to be furnished and installed under this Section.
2. Manufacturers' specifications and other data required to demonstrate compliance with specified requirements.

1.04 PRODUCT HANDLING

A. Protection: Use all means necessary to protect materials of this section before, during, and after installation and to protect installed work and materials of all other trades.

B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect/designer and at no additional cost to the YAN.

SECTION 08111
FIBERGLASS INSULATED METAL DOORS

1.05 QUALITY ASSURANCE

A. Qualifications: For fabrication and installation of fiberglass insulated doors or Metal Insulated, and installation of finish hardware on fiberglass/Metal doors and door
frames, use only personnel who are thoroughly trained and experienced in the skills required and who are completely familiar with the manufacturer's recommended methods of installation as well as the requirements of this work.

1.06 REFERENCES

In addition to complying with all pertinent codes and regulations, comply with the following:

A. Manufacture all labeled doors in strict accordance with the specifications and procedure of Underwriters' Laboratories, Inc., and/or Factory Mutual requirements, for doors where shown on drawings as "labeled". (Between Garage and House 20 Min Rating)

B. In guarantee and shop drawings, comply with nomenclature established in American National Standards Institute publication AI23-1, "Nomenclature for Fiberglass insulated doors".

C. All ANXI/SDI standards as applicable.

PART 2 PRODUCTS

2.01 MATERIALS

A. Faces: 1/16-inch minimum thickness, fiberglass-reinforced thermoset composite or metal panel, wood-grained in paintable. Door edges & lockset area reinforced with solid blocking for hardware backup. Door bottom edge: moisture-proof and decay-proof composite. Core: foamed-in-place polyurethane, CFC-free, density 2.0 pcf minimum, K-factor of 0.15 for minimum thermal transmittance. Standard factory sizes may used Include ½”inch high by 6”inchs in width ADA aluminum thresholds color to be silver.

SECTION 08111
FIBERGLASS/ INSULATED METAL DOORS

B. Swing-in models:
Swing-out models:
jacketed thermoset closed-cell foam, press-fit in kerfs at jamb stops in frames. Extruded thermoplastic elastomer, finned and chambered design, press-fit into bottom edge of doors. Corner pads at bottom margin corners from jacketed thermoset closed-cell foam. same weatherstrip as swing-in models, bottom gaskets integral with sills. Minimum thickness 1 /3/4” for exterior doors.

PART 3 EXECUTION

3.01 SURFACE CONDTIONS

A. Inspection
1. Prior to installation of hollow metal work, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
2. Verify that hollow metal work can be installed in strict accordance with all pertinent codes and regulations, the original design, approved shop drawings and manufacturer's recommendations.

B. Discrepancies
1. In the event of discrepancy, immediately notify the Architect/designer.
2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.02 FABRICATION, GENERAL

A. Fabricate fiberglass / metal door units to be rigid, neat in appearance and free from defects, warp or buckle. Fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at project site.

B. Finish Hardware Preparation: Prepare doors to receive lockset and deadlock units specified in "Finish Hardware Section 08710". Hang door with three hinges.

C. Reinforce doors to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at project site.

D. Locate finish hardware as indicated on final shop drawings or, if not indicated, in accordance with "Recommended Locations for Builder's Hardware", published by Door and Hardware Institute.

SECTION 08111
FIBERGLASS/ INSULATED METAL DOORS

3.03 INSTALLATION

A. Installation of anchors and attachments: Install per manufacturer's recommendations and approved shop drawings.

B. Fiberglass door installation:
1. Install all doors in strict accordance with all pertinent codes and regulations, the approved shop drawings, and the manufacturer's recommendations, anchoring all components firmly in position for long life under hard use.
2. Do not warp or twist frames.

C. Hardware preparation: Install all hardware specified for fiberglass doors and wood frames. Anchor firmly. Insure proper action of all components; adjust as necessary.

D. Swing-in models:
Swing-out models:
jacketed thermoset closed-cell foam, press-fit in kerfs at jamb stops in frames. Extruded thermoplastic elastomer, finned and chambered design, press-fit into bottom edge of doors. Corner pads at bottom margin corners from jacketed thermoset closed-cell foam. same weatherstrip as swing-in models, bottom gaskets integral with sills.

E. Milled from 5/4 kiln-dried pine, profiled with 1/2-inch stop, minimum depth 4-9/16-inches. Other frame depths available to match wall constructions. Exterior casing brickmould in WM180 pattern available. Optional maintenance-free clad frames and brickmoulds are prefinished white.

F. Wide range of sill options:
Double-door and hinge patio door models:
Sidelite options:
thermally-broken fixed, adjustable with oak threshold,
swing-in, swing-out, public-access, aluminum, brass or bronze anodized finish. Double door in 6/8 height and 8/0 height available with both leaves active and locking astragal available, hinge patio doors in standard 6/8 height, replacement 6/6 height and 8/0 height available, patio models available in two-panel and three-panel options (one door active, others stationary). flush-glazed lite models, raised molding models, and raised panel models with panels flush with doors all available to match doors, in 12-inch and 14-inch widths. Sidelite systems available with mullions separating doors from sidelites, and continuous sills and frame head, or as separately framed and cased units, joined together.

3.04 FIELD QUALITY CONTROL

A. Door Clearances:
1. Not to exceed 1/8 in. between door and frame or at meeting stiles.
2. 3/8 in. at door sill with no threshold.
3. 1/4 in. at door sill with threshold.
4. Not less than 1/16” after application of paint or finish.
5. Seal between threshold and concrete slab.
6. Caulk between threshold and jambs with latex caulking with silicone. Paintable.

B. Use of Filler Materials: The use of metallic or other fillers to conceal manufacturing or installation defects that exceed 1/8" in dept, 2" in length, or 1/4" in width is not permitted.

3.05 ADJUST AND CLEAN

Check and readjust operating finish hardware items, leaving fiberglass insulated undamaged and in complete and proper operating conditions.

ALL Exterior doors including to garage to have ADA threshold

NOTE- BACK DOOR CHANGED TO A HALF LIGHT WITH BLINDS IN GLASS

END OF SECTION

SECTION 8145
SECURITY SCREEN DOORS

Manufacturer / Model

Gresham- Model 80822
808 series 36x80 White Protector Security Screen door.

Installation

Security Screen doors to be installed to Manufacturer Installation instructions. Install matching rubber bottom door sweep on inside of door and adjusted so to keep insects out. Seal bottom of side rails to help keep insects out.

Location

Security Screen doors to be installed on back entry of home.

END OF SECTION

SECTION 08211
WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Work includes but not necessarily limited to pre-hung hollow core doors as shown on the drawings and as specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.
B. Rough Carpentry …… Section 06100.
C. Finish Carpentry …… Section 06200.
D. Finish Hardware …… Section 08710.
E. Painting …… Section 09900.

1.03 SUBMITTALS

A. General: Comply with provisions of Section 01340.

B. Manufacturers' data: Within 30 calendar days after award of the Contract, submit:
1. Complete materials list of all items proposed to be furnished and installed under this Section.
2. Manufacturers' specifications and other data required to demonstrate compliance with specified requirements.

1.04 PRODUCT HANDLING

A. Protection: Use all means necessary to protect materials of this section I before, during, and after installation and to protect installed work and materials of all other trades.

B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect/designer and at no additional cost to the Owner.

1.05 QUALITY ASSURANCE

A. Acceptable Manufacturers: Qualified to affix each door with National Woodwork Manufacturers' Association (NWWMA) seal of approval or quality certification stamp.

B. Allowable Tolerances for Fabrication of Doors.
   1. Size:
      a. Not Prefit: :1/16 in. (1.5 mm) overall dimensions.
      b. Prefit: : 1/32 in. (0.8 mm) overall dimensions.

SECTION 08211
WOOD DOORS

   2. Maximum Warp: 1/8 in.
   3. Squareness: Difference between diagonals measured on face of door between opposing comers shall not exceed 1/16” inch.
   4. Show-through (photographing): 1/100 in. (0.25 mm) deviation from true plane in any 3 in. (76 mm) span on door face.

C. Sealing: Factory seal all four edges of all doors.

D. Prefitting and premachining for hardware: NWMA Standard Procedures and Recommendations for Factory Machining Architect/designerural Wood and Plastic Faced Flush Doors for Hardware.

1.06 GUARANTEE

A. Guarantee materials and workmanship under conditions of NWMA Standard Door Guarantee, for two years.

PART 2 PRODUCTS

2.01 INTERIOR WOOD DOORS

A. Acceptable Manufacturers:
   1. Georgia-Pacific
   2. Arizona Sash and Door Co.
   3. American Door Company (Pima Door and Supply)
   4. Weyerhaeuser

B. 1 3/8" Hollow core doors, raised panels (six panels), factory primed ready for finish coat.

C. 1 3/8” solid core doors, flush panel or raised panels (six panels), factory primed ready for finish coat.

D. Factory Preparations (Doors shall be factory or mill pre-hung.)
   1. Prefitting:

a. Swinging doors: Standard clearance allowances of 1/8" at top and at each side, and 3/4" from bottom.

2. Pre-hung frames: 3/4 "pine.

E. Package all doors in slip sheet, non-staining material, clearly labeled for project application/location.

F. Solid wood finger joint styles.

G. Priming:

1. Factory prime door faces, louvers, moldings, and side edges.

PART 3 EXECUTION

3.01 Pre-machine doors for specified hardware.

A. Hang doors with three hinges.
SEE Hardware Section 08710

B. **Laundry room doors to be "Barn Door Hardware"**

3.02 ADJUST AND CLEAN:

A. Replace or rehang doors which are hinge bound and do not swing or operate freely.

B. Refinish or replace job finished doors damaged during installation.

END OF SECTION

SECTION 08310
ACCESS DOORS AND FRAMES

PART 1 GENERAL

1.01 SUBMITTALS

A. Shop Drawings: Submit Drawings showing sizes, construction and installation details.

1.02 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Deliver materials to site in Manufacturer's original unopened packaging with labels intact.
B. Storage and Protection: Deliver and store items in dry, protected areas. Adequately protect against damage while stored at the site.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Furnish products of one of the following Manufacturer's, except as approved by the Architect/designer, subject to compliance with Specification requirements:

1. Milcor Inc. www.milcorlp.com

2. Karp Associates www.karpinc.com

3. J.L. Industries www.jlindustries.com

4. Cierra Products www.cierraproducts.com

2.02 ACCESS DOORS

A. Doors: Sizes as shown on the Drawings. Units shall be prime painted steel at painted wall construction and stainless steel in tile and other locations as indicated, in types as required by wall construction, as follows (based on Milcor):

1. "DW", drywall walls.

2. "K", plaster walls and ceilings.

3. "M", masonry, tile walls, etc.

4. Minimum size 10"inch, Maximum size 12"inch

SECTION 08310
ACCESS DOORS AND FRAMES

B. Door and Frame: 16 gage steel. Provide key operated cylinder lock with additional screw driver operated cam locks in sufficient quantity as recommended by manufacturer to hold door in flush closed position. 16 gage steel shall be used for door and frame. Type K door shall have concealed spring hinges to allow door to open a minimum of 175 degrees as required or as indicated on the Drawings.

C. Access Doors in Fire Rated Construction:

1. Doors shall be UL or Warnock Hersey labeled and meet self-closing and self-latching requirements for fire rated ceiling assembly.

2. Doors shall be UL 1 ½ hour fire rated when located in a fire rated wall assembly.

3.01 INSTALLATION

A. Install access doors in accordance with Manufacturer's directions at locations shown on Drawings. Do not install panels in locations where frame will extend over transition between two separate wall or ceiling finish materials (i.e. tile to gypsum board).

B. Install plumb and level, true to line.

3.02 CLEANING

A. During the course of the Work and on completion of the Work, remove excess materials, equipment and debris and dispose of away from premises. Leave Work in clean condition.

END OF SECTION

SECTION 08520
VINYL WINDOWS

PART 1 GENERAL –. MUST MEET ENERGY STAR REQUIREMENTS FOR "U" VALUE AND SHGC. COLOR WHITE

4. Thermal Transmittance (U-Factor): Based on North Central Climate Zone
    a. Thermal testing is to be conducted in accordance with the NFRC100 procedure.
    b. Maximum Residential U-Factor is to be .030 or less The SHGC it to be 0.40 or less
    c. Glass for Thermal Transmittance testing shall be in accordance with the requirements for validation of the NFRC glass matrix.

1.03 Submittals:

A. Product Data: Submit Manufacturer's Specifications and performance data.

B. Shop Drawings: Submit Drawings showing elevations of each frame type, details, locations, size and thickness of materials, joints and connections, and installation requirements.

C. Samples: Submit 2 samples of vinyl manufacturer's for approval.

1.04 Delivery, Storage and Handling:

A. Packing and Shipping: Deliver materials to site in Manufacturer's original unopened packaging with labels intact.

B. Storage: Adequately protect against damage while stored at the site.

C. Handling: Comply with Manufacturer's instructions.

1.05 Warranty

A. Furnish manufacturer's standard warranty for materials, installation and performance for not less than 5 years. Deficiencies or failures of materials, installation or performance shall be repaired or replaced at no additional cost to Owner.

SECTION 08520
VINYL WINDOWS

PART 2 PRODUCTS

2.01 MANUFACTURER AND MODEL Color to be **White**

A. Windows shall be manufactured by one of the following:
1. MI Widows and Doors, Prescott Valley, AZ.
2. Homemaker 3 with TMAX Solar Control SC ¾"
3. Other manufacturer's will be considered

2.01 Materials

A. 1. Weather-stripping and Glazing Vinyl:
Glass and Glazing:
1. Glazing stops shall be snap-in type. Screw applied stops are not acceptable.
2. Glass: low E, Thickness is 3/4 inch. Dual pane construction.
3. Windows shall be factory glazed.
4. Color of window frame and screen frame to be **White**

E. Security: Certify that the product complies with the forced entry requirements of the Uniform Building Code, AAMA 1302.5 or ASTM F 588.

F. Screens: Frames of 6063-T6 roll-formed aluminum with a minimum wall thickness of 0.030 inch. Mesh 18 X 14 black coated aluminum wire. Mesh secured to frame with removable vinyl spline for field replacement.

SECTION 08520
VINYL WINDOWS

PART 3 EXECUTION

3.01 INSTALLATION

A. Use only skilled tradesmen for the installation of the vinyl windows.

B. Prior to commencement of the installation, verify that all discrepancies have been corrected. Commencement of installation constitutes acceptance of conditions.

C. Erect windows square and true, in strict accordance with the manufacturer's published installation instructions. Furnish adequate anchoring to maintain position and integrity of windows when subjected to normal building movement and the specified wind load.

D. Furnish and apply sealants in accordance with manufacturer's published installation instructions and Section 07900 to provide a weather tight installation. Remove all excess sealants to leave all exposed surfaces and joints clean and smooth. Use non-expanding foam between frame and exterior opening of wall.

3.02 ADJUSTMENT AND CLEANING

A. Upon completion of the work, clean any dirt and manufacturer's identification marks from surfaces. DO NOT REMOVE THE PERMANENT ANSI/AAMA OR NFRC LABELS.

B. Adjust the vinyl windows for proper operation after installation and cleaning has been completed.

END OF SECTION

SECTION 08710
FINISH HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Furnish and deliver to the job site all finish hardware required to complete the work as indicated on the drawings and specified herein. Provide all trim attachments, and fastenings specified or required for proper and complete installation.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.

B. Finish Carpentry ……. Section 06200.

C. Steel Insulated Doors …….. Section 08111.

D. Flush Wood Doors…….. Section 08211.

1.03 QUALITY ASSURANCE

A. Approved manufacturers: Catalog numbers and references used in this specification are those of the following approved manufacturers for the items shown.

Tylo Locksets, latchsets, deadbolts.	Kwikset
Surface bolts, peep holes, stops	Ives, Stanley
Hinges	Stanley
½"inch Thresholds (ADA compliant), Weather stripping, Gaskets, Threshold anchor, Door shoe	Pemko, National Guard Prod.

B. Lockset Construction: Mechanism shall be heavy wrought steel, zinc plated and dichromated with coil compression springs, roller bearings on latch retractors. Plastic parts not acceptable.

C. To the greatest extent possible, obtain all Finish Hardware of the same type of item from only one Manufacturer.

SECTION 08710
FINISH HARDWARE

1.04 SUBMITTALS

A. General: Comply with requirements of Section 01340, Shop Drawings, Product Data and samples.

B. Manufacturer's Literature: Submit manufacturer's literature showing all details of hardware proposed for installation for YANTHS approval. Submit cut-sheets for all hardware.

C. Hardware Schedules: Submit complete schedule for approval. See Architect/designerural Drawings.

D. Samples: Submit one (1) set of hardware for each hardware set to YANTH office.

1.05 PRODUCT HANDLING

A. Protection: Use all means necessary to protect materials of this section before, during and after delivery to the job.

B. Replacements. In the event of damage, immediately make all repairs and replacements necessary to the approval of YANTH and at no additional cost to YANTH.

PART 2 PRODUCTS

2.01 GENERAL

A. Proprietary products: References to specific proprietary products are used to establish minimum standards of utility and quality. Unless otherwise approved by the YANTH, provide only the specific products. Design is based on the materials specified.

B. Fasteners:
1. Furnish all finish hardware with all necessary screws, bolts, and other fasteners of suitable size and type.

2. All fastenings shall harmonize with the hardware as to material and finish.

C. Finishes of all hardware shall match the finish of the lock sets, submit finish of hardware to YANTH, if not specified. Take special care to coordinate all of the various manufactured items furnished under this Section, to ensure acceptably uniform finish.

D. Carefully check door swings before ordering hardware. Determine hand of openings. Indicate hand on schedule submitted for approval.

E. Notify YANTH in writing if omissions are discovered in hardware groups specified herein. Do not proceed until instructed.

NOTE: It shall be the specific duty and responsibility of the Finish Hardware supplier to carefully examine the plans and specifications and the existing construction and furnish proper hardware for all openings whether listed or scheduled or not.

2.02 HARDWARE AND SPECIALATIES:

Hardware sets specified herein shall meet the following requirements:

A. Fastening Devices: Include all screws, bolts, thrubolts, hexbolts, expansion shields, and other devices necessary for proper hardware installation; all of suitable size, type, materials, and finish to harmonize with hardware.

B. Hinges: All hinges template, full mortise.

C. Weather stripping: Provide at all four edges of exterior doors, and extra weather stripping at comers as required.

D. Thresholds: Silver Aluminum in color and ½”inch in height.

E. Door Stops: Furnish door bumper as scheduled for each door which can hit any wall or obstruction, complete with expansion shields, machine screws or toggle bolts as required. Review each area of construction for application type to insure solid blocking for anchoring or fastening door stops.

F. Bi-Pass closet door bottom guides to be removable made out of metal and nylon, and of sturdy design, so doors don’t slip out of guide.

G. Latchsets and Deadbolts:
1. Doors from all rooms and closets, etc., shall have latchsets of a type which are openable at all times from the inside by merely using the lever and not requiring any special knowledge or effort. Furnish with strike plates. Backset for all doors shall be 2 3/8".
2. Latchsets and deadbolts shall be lever type Kwikset series. All Units shall have Kwikset Lever operation with the functions as listed in the schedule, from garage to home will be a lever type lockset to meet ADA requirements.

3. Doors from exterior and garage hardware shall be keyed and have a dead bolt. All Bedroom and bathroom doors shall have privacy hardware. All doors to be keyed alike.
Closets and laundry room doors shall have passage hardware.

SECTION 08710
FINISH HARDWARE

H. Miscellaneous:
1. All other items, not specifically described but required for a complete and proper installation of finish hardware, shall be as selected by the Contractor subject to the approval of YANTH.
2. Furnish templates to other trades and/or manufacturers as required.

2.03 KEYING -USE SMART KEY

A. Master keying: Master key all locks and cylinders.

B. Key alike: Locksets and deadbolts for the house.

C. Number of keys: Furnish four (4) keys for the house.

D. Tag all keys and deliver to YAN at completion of work. Account for all construction keys to satisfaction of Owner.
1. Walk YAN thru project door by door and verify with YAN that all keys work as intended.
2. Prove change key and master key for each lock.
3. YAN will verify acceptance of keys by the door as witnessed by their signature.

E. All keying to be keyed alike per each unit, contractor is responsible.

2.04 TOOLS AND MANUALS

A. With the delivery of permanent keys, deliver to the YAN one complete set of adjustment tools and one set of maintenance manuals for locksets and latch sets.

PART 3 EXECUTION

3.01 DELIVERIES

A. Stockpile all items sufficiently in advance to ensure their availability, and make all necessary deliveries in a timely manner to ensure orderly progress of the total work.

3.02 INSTALLATION

A. All entrance door hardware shall conform to and be installed per Building Security of the V.B.C. Provide information to prove compliance.

B. Install all hardware in strict accordance with manufacturer's directions. Use templates furnished by manufacturer. Make provisions for protection of finishes from staining for damage from construction operations. Each item shall be completely installed then removed and stored during the finish application. Reinstall after completion of finishing is complete. Install all units at heights recommended by the Builder's Hardware Manufacturer Association (BHMA), unless otherwise indicated.

C. Weather stripping: Apply on all four edges of exterior doors, apply extra weather stripping at comers as required, use stainless steel or bronze screws for application to metal frames. Coordinate with manufacturer of hollow metal work to obtain required clearances. Apply only after painting has been completed.

D. Thresholds: Set ½"inch thresholds level in bed of caulk, shimming if required, as detailed with machine bolts in inserts. Finish flooring to butt to threshold with neat, clean appearance (ADA compliant).

E. Door Bumpers: Install with expansion shields, machine screws or toggle bolts as required by the situation. See Section 06100 for solid wood blocking.

F. House Numbers: Obtain numbering from YAN and install per manufacturer's recommendations at locations directed by Architect/designer.

3.03 ADJUSTMENTS AND CLEANING:

A. Adjust all hardware for proper operations:
1. Re-hang hinge-bound doors.
2. Adjust strikes to provide tight fit of door against frame stops.
3. Adjust locksets for smooth operation and latching.

B. Adjust weather stripping and seals to ensure proper contact all around to provide fully weathertight and dust-tight closure.

C. Replace any item which cannot be adjusted for correct operation, or as directed by Architect/designer.

D. Inspect and test all keys in all locksets for proper operation. Adjust or replace as required.

E. Clean all hardware thoroughly.

3.04 HARDWARE SCHEDULE – See Architect/designer Drawings and Verify with YANTH

END OF SECTION

SECTION 09100-Floor Tile

All interior living space it to be tiled with Elements Vinyl Tile or approved equal.

To be Elements of Nature series 16x16 Vinyl tile.
Three different colors will be used, submittals are required.
Installed in a workman like manner.

Meets ASTM C-1028 for slip resistance.

Three different colors will be selected to compliment vinyl tile and countertops.

Submittals will be required.

SECTION 09200
~~LATH AND PLASTER (STUCCO~~)
SYNTHETIC STUCCO

PART 1 GENERAL

A full submittal package is required for this application.

~~1.01 SECTION INCLUDES:~~

~~A. Work includes, but is not necessarily limited to, Portland Cement plastering applications as specified herein, and as shown on drawings.~~
~~1. Metal plaster screeds, beads, and reinforcing~~
~~2. Lath and glass fiber reinforced cement plaster applications at wood framing.~~

~~1.02 RELATED WORK SPECIFIED ELSEWHERE~~

~~A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.~~

~~B. Rough Carpentry…… Section 06100.~~

~~C. Flashing and Sheet Metal …… Section 07600.~~

~~D. Gypsum Board …… Section 09250.~~

~~E. Painting …… Section 09900.~~

~~1.03 QUALITY ASSURANCE~~

~~A. Manufacturer: Obtain materials for stucco from a single source to ensure consistency and quality. Manufacturer shall have produced the specified products for a period of three (3) years prior to beginning work of this section, and shall have the capability to produce the specified products to the delivery and quantity criteria of the project.~~

~~B. Staff: For fabrication and installation of work, use only personnel who are thoroughly trained and experienced in the skills required, have installed similar applications of the specified products within one (1) year prior to beginning work of this section, and who are completely familiar with the manufacturers' recommended methods of installation as well as the requirements of this work.~~

SECTION 09200
LATH AND PLASTER (STUCCO)

1.04 SUBMITTALS

A. Product data:
1. Complete material list of all items and materials proposed to be furnished and installed under this section.
2. Samples of proposed accessories.

B. Sufficient evidence of qualifications of contractor and his experience record.

1.05 REFERENCES

A. Codes and Regulations
1. International Residential Code
2. Applicable Health Department Regulations

B. Organization and Trade Standards
1. Metal Lath/Steel Framing Association, "Specifications for Metal Lathing and Furring", abbreviated MLSF A.
2. ASTM Standards, as indicated below.
3. Stucco Manufacturers Association Texture Illustrations.

PART 2 PRODUCTS

2.01 APPROVED SYSTEMS

A. Western Stucco Company is located in Glendale Arizona and has a product called Western 1 Kote Gray Concentrate. Fiber reinforced. Modified Portland cement base coat.

2.02 STUCCO

A. Fiber-reinforced Portland Cement Plaster, proprietary mix, pre-mixed with sand.

2.03 FINISH COAT

A. 1 part type 1 cement, 3/4 to 1 1/2 lime, 3 parts sand by volume.

2.04 WEATHER RESISTIVE BARRIER

A. Dupont Tyvek Home Wrap weather barrier system to be used under foam and wire lath.

SECTION 09200
LATH AND PLASTER (STUCCO)

2.05 LATH

A. Wire fabric lath, No. 17 gauge, 1" galvanized steel woven wire fabric, self furring with furring crimps at 3" o.c. horizontally and 6" o.c. vertically to furr lath minimum 1/8" from substrate after installation. To be installed over 1" stucco foam board.

2.06 ACCESSORIES

A. Weep screeds, Bull nose corner beads, Casing beads, control joints (one piece "M" type) - galvanized steel.

B. Corner reinforcement - expanded metal diamond mesh.

PART 3 EXECUTION

3.01 Ambient air temperatures must be between 40 and 100 deg.

3.02 INSPECTION

A. Verify that surfaces to be plastered are free of dust, loose particles, oil, and other foreign matter which would affect bond of plaster coats.

B. Verify that stucco netting is tight with overlapping of wire, that all corner aids are properly attached, and metal lath around all doors and windows are secure.

C. Examine construction, grounds, and accessories to ensure that finish plaster surfaces will be true to line, level, and plumb without requiring additional thickness. Correct conditions detrimental to proper completion of work.

3.03 Apply one layer of Dupont Tyvek under I" Rigid Insulation Boards. Apply paper or felt weather board fashion, lapping vertical joints a

minimum of 4" and horizontal joints 6". Tyvek manufacturer installation instructions supersedes spec book. For warranty purposes.

3.04 Provide bull nose comer beads at comers of stuccoed columns, casing beads where stucco stops against dissimilar materials and control joints where shown. Wire control joints to lath, not nailed. Install control joints from top to bottom of stucco. Provide comer, reinforcement at all exterior comers and 12" x 12" metal lath reinforcement at comers of doors and windows and all openings. Provide weep screeds at termination of stucco at foundation wall.

SECTION 09200
LATH AND PLASTER (STUCCO)

3.05 House Wrap: Apply Tyvek Home Wrap over plywood sheathing.

3.06 Lath: Applied tightly over polystyrene board with galvanized roofing nails with 3/8" head or galvanized staples with 1/2" minimum crown width spaced 6" o.c. with 1 1/2" minimum penetration. Apply lath with 1 1/2" end and side laps, staggered.

3.07 Stucco: Mix and apply in accordance with manufacturer's instructions to a minimum thickness of 3/8" using sufficient trowel pressure to key plaster into lath. Rod surface to true plane. (Maximum variation of 1/8" in 10ft) Do not apply stucco base coat before caulking around penetrations of exterior walls is completed on the polystyrene board.

3.08 Finish Coat: Apply minimum 1/8" thick according to manufacturer's instructions. Total thickness of stucco shall be minimum 1/2" thick. Apply finish coat within 48 hours after base coat. After 48 hours, spray/brush base coat with acrylic-bonding adhesive or bonding treatment complying with UBC Standard No. 47-1 added to the finish coat mix.

3.9 Finish: Finish texture shall be sand texture. Furnish sample before proceeding with work.

3.10 CURING:

A. Curing is of critical importance.

B. Maintain moist conditions by a fine fog spray on final coat. C. Cure for a minimum of 3 days.

3.11 Adjust and clean: Upon completion, point up plaster around trim and where plaster terminates or meets dissimilar materials. Cut out and replace defective or damaged areas to match surrounding areas.

~~Remove plaster and stains from adjacent materials. Remove plaster from control joint channels.~~

Note- No Stucco "Pop outs" at Front Door and Back Door.

~~Ruff sawn lumber will be installed.~~

END OF SECTION

SECTION 09250
GYPSUM WALLBOARD

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Work includes, but is not necessarily limited to gypsum wallboard and finishing for walls, ceilings and miscellaneous applications as shown on drawings and as specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.

B. Rough Carpentry …… Section 06100.

C. Lath and Plaster (Stucco) ……Section 09200.

D. Building Insulation: Thermal & Sound …… Section 07200.

E. Sealants and Caulking …… Section 07920.

F. Painting …… Section 09910.

1.03 QUALITY ASSURANCE

A. Staff

1. Use only skilled and experienced gypsum drywall installers for laying up gypsum board, fastening, taping and finishing.
2. Helpers and apprentices used for such work shall be under full and constant supervision at all times by thoroughly skilled gypsum drywall installers.
3. In the acceptance or rejection of installed gypsum drywall, no allowance will be made for lack of skill on the part of the installers.

B. Manufacturer's recommendations: The manufacturer's recommended methods of installation shall be the basis for acceptance or rejection of actual installation methods used in this work.

SECTION 09250
GYPSUM WALLBOARD

1.04 REFERENCES

A. In addition to complying with all codes and regulations, comply with the referenced portions of the following:
1. Gypsum Association, GA 216-85
2. USG Construction Handbook
3. ASTM C36
4. ASTM C475

1.05 SUBMITTALS

A. Submit samples of texture on 24 in. x 24 in. board for approval before application. **Medium skip trowel texture**

1.06 ENVIRONMENTAL CONDITIONS:

A. Maintain temperature between 50 to 70 deg. F both day and night 24 hours before, during and after joint finishing and 55 degrees until permanent heating system is in operation or the building is occupied.

PART 2 PRODUCTS

2.01 MATERIALS

A. Gypsum Wallboard:
1. Regular board:
   a. Thickness: 5/8" on interior walls, 5/8” on exterior walls
2. Water-resistant board:
   a. Thickness: 1/2" or 5/8”
   b. Use in all bath walls, sink wall in kitchen and washer/dryer wall in utility-laundry.
3. c. Separation walls in duplex’s use 5/8” Doubled and extending to bottom of roof plywood.

B. Fasteners and spacing refer to International Residential Code, IRC, 2012 code book, Table R702.3.5

C. Control Joints: (5/8" Exterior Gypsum Ceiling Board) 1. Sheetrock control joint No.093.

SECTION 09250
GYPSUM WALLBOARD

D. Joint Compound:
1. For general use interior: Lightweight ready mixed all purpose joint compound (plus 3)
2. For Exterior Gypsum Ceiling Board: Sheetrock setting type Durabond or sheetrock lightweight (Easy Sand setting type)

E. Texture:
1. USG Multipurpose texture

PART 3 EXECUTION

3.01 INSPECTION

A. Check framing for accurate spacing and alignment.

B. Do not proceed with installation of gyp. bd. until deficiencies are corrected.

3.02 APPLICATION

A. General:
1. Conform United States Gypsum Co. Gypsum Construction Handbook, Ninetieth Anniversary Edition.
2. Use gyp. bd. of maximum lengths to minimize end joints. 3. Space between floor and gyp. Bd., maximum 1/2".

B. Interior:
1. Ceilings: Apply gyp. bd. with long dimension at right angles to framing.
2. Walls: Apply gyp. bd. horizontally. Attach upper gyp. bd. first. Stagger end joints to occur on different framing members on opposite sides of partition.
3. Nailing: Attach starting from center of gyp. bd. and proceed toward outer ends and edges. Drive screws home with maximum 1/32” dimple.
Do not fracture wallboard face paper. Space screws 12 in. on centers in field of gyp. bd Drive screws spaced maximum 7" o.c. around perimeter of gyp. bd.
See structural drawings for shear wall nailing.

C. Exterior ceilings:
1. ~~Where ceiling board expanse exceeds 4 ft., provide a space at least 1/4" between the edge of the exterior ceiling board and~~

~~adjacent walls, beams and columns. Cover the space with cove molding. Do not caulk.~~

SECTION 09250
GYPSUM WALLBOARD

2. Provide expansion joints in long narrow areas at maximum 30 ft. apart. Separate wings of "L ", "U" and "T" shapes with expansion joints.

D. Joint System:

Taping and finishing joints for interior gyp. bd. only:

1. Apply tape with mechanical tools for taping of interior drywall. Use compound of suitable consistency, mechanically tape all joints; wipe down with broad knife. Mechanically tape interior angles. Finish both sides of angles with comer roller and comer finisher.
2. Apply first coat to fastener heads and metal accessories.
3. Apply fill coat of compound over tape on flat joints using hand finisher tool. Using compound of thicker consistency, spot fastener heads and apply second coat to metal accessories. Allow to dry.
4. Apply finish coat of compound to flat joints, feathering edges about 2" beyond preceding coat. Apply finish coat to fastener heads and metal accessories.
5. Allow to dry and smooth lightly. Do not scuff paper.

E. Joint System for exterior ceiling board:

1. Use hand application techniques for setting type compounds.
2. Pre-fill joints with joint compound. After pre-fill has set, tape all joints with compound and joint tape. When compound sets, immediately apply a fill coat of compound.
3. Apply compound over flanges of control joints and spot all fastener heads.
4. After fill coat has set, apply compound finishing coat. Completely cover all joints, control joints and fasteners angles.

F. Texture:
Light Orange Peel or knock down texture. Provide sample for approval before applying for Architect/designer’s Approval.

3.03 ADJUST AND CLEAN

A. Nail Pop:
Repair nail pop by driving drywall screw approximately 1-1/2" from nail pop and reseat nail. Finish with joint compound.

B. Fill cracks with compound and finish smooth and flush.

C. Remove over spraying.

D. Remove all rubbish, excess material and equipment from job site; leaving floors and other surfaces clean.

END OF SECTION

SECTION 09900
PAINTING

PART 1 GENERAL

1.01 SECTION INCLUDES PAINTING AS SHOWN ON THE DRAWINGS AND AS SPECIFIED HEREIN.

A. Paint all exterior (except vinyl) and interior exposed surfaces including but not limited to all gyp. bd. and wood surfaces, vents (mechanical and plumbing) equipment supports, flashing, metal edging, exposed ductwork, exposed vertical concrete, exposed electrical panels and conduit.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.

B. Sealants and Caulking Section 07920.

C. Factory Prefinished Items: As Specified

1.03 QUALITY ASSURANCE

A. Definitions: The term "paint" as used herein, includes enamels, paints, stains, sealers, fillers, emulsions, and other coatings whether used as prime, intermediate or finish coats.

B. Qualifications:
1. Use only qualified journeyman painters for the mixing and applications of paint; in the acceptance or rejection of installed painting, no allowance will be made for lack of skill on the part of the painters. Use only qualified applicators certified by

manufacturer for stain applications. (Submit copy of certification with bid quote.)

2. Coordination of work: Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of coatings for various substrates. Inspect all substrates prior to application of paint or stains, and notify general contractor immediately of any discrepancies or problems. Do not proceed until surfaces are acceptable.

SECTION 09900
PAINTING

C. Standards
1. Preparation, application and workmanship shall be in accordance with manufacturer's recommendations and applicable provisions of the Painting and Decorating Contractors of America's (PDCA) "Painting Specification Manual" and "Standards".
   a. PDCA Pl-92, "Touch-Up Painting and Damage Repair - Financial Responsibility"
   b. PDCA P2-92, "Third Party Inspection Qualifications and Responsibilities"
   c. PDCA P3-93, "Designation of Paint Colors"
   d. PDCA P4-94, "Responsibilities for Inspection and Acceptance of Surfaces Prior to Painting and Decorating".
   e. PDCA P5-94, "Benchmark Sample Procedures for Paint and Other Decorative Coating Systems"
   f. PDCA, Arizona Council Technical Paper AZP-P07-89, "The Four Levels of CMU Bock Filling"

D. Job Mock-up:
1. Before proceeding with any painting, prepare paint samples of each color using the exact amount of material recommended by the manufacturer and applied in the specified number of coats. When approved, it shall serve as a standard for workmanship, appearance and materials approved throughout the project.

1.04 SUBMITTALS

A. Single Source Responsibility: Provide all paints, primers and other undercoats produced by same manufacturer as finish coat. Use only thinner approved by paint manufacturer, within recommended limits.

B. Color Samples (See color schedules in specification)
1. Prepare on cardboard not less than 12 inches square. 2. Submit in triplicate.

C. Product information sheets listing raw materials of each product and the percentage of each.

D. ~~Floor sealant to be Sherwin Williams, heavy duty floor sealant. Submittal is required.~~

SECTION 09900
PAINTING

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery of Materials:
1. Deliver sealed containers with labels legible and intact.

B. Storage
1. Protect against damage while stored.

1.06 JOB CONDTIONS

A. Environmental Requirements:
1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be applied.
4. Do not apply finish in areas where dust is being generated.
3. Comply with all local laws governing VOC regulations.

B. Protection:
1. Cover or otherwise protect finished work of other trades and surfaces not being painted concurrently or not to be painted.

PART 2 PRODUCTS- LOW VOC per Green Seal Standards

2.01 ACCEPTABLE MANUFACTURERS

A. Except as otherwise specified, materials shall be the products of:

Interior:

1. Sherwin-Williams– (No substitutions allowed) – Color of choice "cottage white semi-gloss"

2. PVA for interior primer.

3.

Exterior:

1. Sherwin-Williams –
2. ~~Sherwin-Williams - **Loxon** primer for exterior stucco.~~
3. Sherwin-Williams – Quick Dry Stain Blocking Primer for wood
4. Dura Craft Satin finish paint for wood Including exterior doors.

B. Materials selected for coating systems for each type of surface shall be the product of a single manufacturer.

2.02 SUBSTITUITIONS

A. SEE Section 01600, Materials and Equipment.

SECTION 09900
PAINTING

2.03 MATERIALS

A. Products listed are as manufactured by Sherwin-Williams Paints unless otherwise indicated; equal products of acceptable manufacturers listed in Section 2.1 may be furnished in lieu, except on the Interior Painting.

2.04 PAINT SCHEDULE

A. ~~Exterior Stucco~~
~~1 st coat: Loxon Masonry Prime/Sealer W709~~
~~2nd coat: Elastomeric Wall Coating (Smooth) Color by Architect/designer~~
~~Dry Film Thickness Per Coat = 8 mils~~
~~3rd coat: Elastomeric Wall Coating (Smooth) Color by Architect/designer~~
~~Dry Film Thickness Per Coat = 8 mils~~

~~Note: An approved application must be pinhole free and have a total dry fllm thickness of 15.2 mils.~~

B. Exterior Wood
1st coat: Quick Dry Stain Blocking, Exterior Acrylic Wood Primer W708
2nd coat: Dura Kraft Satin Finish Ext. 100% Acrylic Enamel Color by Architect/designer
3rd coat: Dura Kraft Satin Finish Ext. 100% Acrylic Enamel Color by Architect/designer

C. Galvanized Metal – Natural, not painted.

D. Roof Vents (plumbing and mechanical), Equipment Supports, Flashing, Metal Edging Exposed Ductwork
1 st coat: Ferrous Metal: Corrobar, White Alkyd Corrosion Inhibiting Primer 43-5
1 st coat: Galvanized Metal: Galv-Alum, Galvanized and Aluminum Primer QD43-7
2nd coat: Acri-Flat, 100% Acrylic Exterior Flat Paint Color by Architect/designer
3rd coat: Acri-Flat, 100% Acrylic Exterior Flat Paint Color by Architect/designer

Note: Paint same color as roof.

SECTION 09900
PAINTING

E. Interior Wood
1 st coat: Quick Dry Latex Stain Blocking Primer.
2nd coat: Interior PMC Latex Semi-Gloss Enamel
Cottage White
3rd coat: Interior PMC Latex Semi-Gloss Enamel Cottage White

F. Interior Drywall
1 st coat: PVA Interior Latex Primer Sealer
2nd coat: Interior Latex Semi-Gloss Enamel Cottage White
3rd coat: Interior Latex Semi-Gloss Enamel Cottage White

Note: Add mildewcide to 3rd coat of paint in bathrooms.

2.05 MIXING AND TINTING

A. Deliver paints and enamels ready-mixed to job site.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine surfaces scheduled to receive paint and finishes for conditions that will adversely affect execution, permanence, or quality of work and which cannot be put into an acceptable condition through preparatory work as included in Article 3.02.

B. Do not apply additional coats until completed coat has been inspected by the Architect/designer.

C. Only inspected coats of paint will be considered in determining number of coats applied.

D. Compliance to meeting the criteria of a properly painted surface will be determined when viewed without magnification at a distance of five feet or more, under normal lighting conditions and from a normal viewing position. Normal lighting conditions is that in which is in place when the project is finished. This includes, but is not limited to design lighting (i.e., wall washers, spots and flood lights, etc.) and natural lighting (i.e., skylights, clear view windows, window walls, and window treatments, etc.)

SECTION 09900
PAINTING

3.02 PREPARATION

A. Do not proceed with surface preparation or coating application until conditions are suitable. Follow Manufacturers procedures.

B. Wood:
1. Clean soiled surfaces.
2. Except where rough exterior surface is specified, sand to smooth and even surface, then dust off.
3. Apply shellac to all knots, pitch and resinous sapwood before priming coat is applied.
4. Fill nail holes, cracks, open joints and other defects with wood filler and sand smooth after priming coat has dried.
5. After doors are fitted, finish tops and bottoms of all exposed edges with finish specified for interior wood.
6. ***Sand whiskers off ends of sawed boards before painting***

C. Ferrous Metal
1. Clean surface with solvent other than mineral spirits to remove oil, grease and other foreign substances.
2. Remove any loose primer or rust.
3. Prime the same day after preparation to prevent recontamination.

D. Galvanized Metal

E. Paint roof vents, (plumbing and mechanical), equipment supports, flashing, metal edging, same color as roof

3.03 APPLICATION

A. General Requirements:
1. Apply materials per manufacturers' instructions and recommendations.
2. Rate of application shall be amounts as recommended by paint manufacturer for the surface involved.
3. Sand and dust between each coat to remove defects visible from a distance of 5 feet.
4. Finish coats shall be smooth, free of brush marks, streaks, laps or pile up of paints, and skipped or missed areas.

SECTION 09900
PAINTING

5. Inspection
   a. Do not apply additional coats until completed coat has been inspected by the Architect/designer.
   b. Only inspected coats of paint will be considered in determining number of coats applied.
6. Make edges of paint adjoining other materials or colors clean and sharp with no overlapping.
7. Refinish whole wall where portion of finish has been damaged or is not acceptable.

D. Remove spilled, splashed, or splattered paint from all surfaces.

C. Do not mar surface finish of items being cleaned.

3.04 ADJUSTING

A. Where touch-up or damage repair does not match, repaint entire surface area (i.e., whole wall).

3.05 CLEANING

A. Remove spilled, splashed, or splattered paint from all surfaces.

B. Do not mar surface finish of items being cleaned.

3.06 EXTRA STOCK

A. Provide 1% of total of each color in unopened cans, minimum one gallon of each color.

END OF SECTION

SECTION 10520
FIRE EXTINGUISHERS

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Firefighting devices described in this section consists of portable fire extinguishers located (Minimum one per residence)

1.02 RELATED WORK SPECIFIED ELSEWHERE:

A. The general provisions of the Contract, including General Conditions, Special Conditions and General Requirements apply to the work specified in this section.

B. Rough Carpentry……. Section 06100.

C. Sealants and Caulking …….. Section 07920.

D. Gypsum Wallboard ……. Section 09250.

1.03 REFERENCES

A. In addition to complying with all pertinent codes and regulations, all firefighting devices shall be approved by FM or Underwriters' Laboratories, Inc., shall be labeled, and shall be approved by the Fire Marshall.

1.04 SUBMITTALS

A. Manufacturer’s catalog cuts and data sheets, and installation requirements for each item specified.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver items in manufacturer's original unopened protective packaging.

B. Store in original protective packaging to prevent soiling, physical damage or wetting.

SECTION 10520
FIRE EXTINGUISHERS

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Larsen.

B. J.L. Industries (specified).

C. Amenex.

2.02 FIRE EXTINGUSHERS

A. Cosmic Series, 5E
1. 5 lb. Capacity, multi-purpose dry chemical type.
2. Fire Class 2A – lO B:C.
3. Rechargable.

2.03 EXTINGUSHERS WALL BRACKETS

A. Mark Bracket No. MB 818 or Manufacturer’s Standard J-type for wall hung extinguishers.

PART 3 EXECUTION

3.01 INSTALLATION

A. In accordance with details by workmen, skilled in such work and approved by manufacturer. Comply with manufacturer's installation instructions. Install where indicated on drawings.

3.02 FIRE EXTINGUISHERS

A. Place one extinguisher in each wall bracket with each extinguisher fully charged and certified.

END OF SECTION

SECTION 10800
BATHROOM ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Work includes, but is not necessarily limited to, bathroom accessories and components as shown on drawings and as specified herein.

B. Bathroom accessories include the following:

1. 16x26 Medicine Cabinet with two adjustable shelve's, must have stainless steel metal edge around mirror to protect edges.
2. Toilet Paper Holders Style to be square
3. Mirrors – 1/4" thickness.
4. ~~Shower and Tub Doors~~.
5. Towel Bars Style to be 2ft in length ¾"inch square diameter.
6. Double Robe Hooks
7. Grab Bars to be installed in both bathrooms in shower and tub areas. 1½" inch diameter stainless steel, concealed mount, diamond knurled grip.
8. Shower curtain rods at showers and tubs.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.

B. Rough Carpentry ……. Section 06100.

C. Gypsum Wallboard…….. Section 09250.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with the following:
1. ANSI A117.1, 1998 "Accessible and Usable Buildings and Facilities."
2. Public Law 101 – 336 "The Americans with Disabilities Act of 1990" (ADA).
3. ADA Accessibility Guidelines (ADAAG).
4. The Arizonans with Disabilities Act of 1992 Administrative Rules (AzDAAG).
5. Uniform Federal Accessibility Standards (UFAS).

1.04 SUBMITTALS

A. Manufacturer's catalog cuts and data sheets, complete parts list, and installation requirements for each accessory item specified.

SECTION 10800
BATHROOM ACCESSORIES

PART 2 PRODUCTS

2.01 A. Bath Accessories: Provide the following:

1. Medicine Cabinet: Nutone-Hall Mack 268R, Jensen 840P24CH, or approved.
2. Paper Holder: bracket style to be square.
3. Towel Bars: 24” or 30” in length as indicated ¾ square in diameter.
4. Shower Curtain Rod: to be to be stainless steel threaded tension.
5. Grab Bars: Winglts or similar manufacturer, 1½”inch stainless steel, concealed mount, diamond knurled grip.

B. Mirrors: ¼”inch frameless mirrors with polished edges, of sizes indicated on drawings (elevations). Install with manufacturer's standard brushed aluminum chanel. Install per manufacturer's recommendation.

C. No names or labels are permitted on exposed faces of bathroom accessories. (Provide identification on unexposed or back side.)

PART 3 EXECUTION

3.01 INSPECTION

A. Check opening scheduled to receive recessed units for correct dimensions, plumbness of blocking or frames, preparation that would affect installation of accessories.

3.02 INSTALLATION

A. Mount towel bars, curtain rods, and paper holders on concealed wood blocking.

B. Install medicine cabinet 70" to head.

C. Towel bar mounting height - 48 in. above finish floor and 38 in. above finish floor under windows.

SECTION 10800
BATHROOM ACCESSORIES

E. Framer to have already installed blocking for grab Bars in hall bath for tub surround and master bath shower at 34" A.F.F. with 2x6 solid wood nominal lumber, Also at toilets for installation of 3'0" long Grab Bar behind the toilets and 4'ft long Grab Bar on the side of the toilet. Grab Bars height is 34" A.F.F. Grab bar must extend 2' from the front edge of the toilet bowl.

F. **Only install horizontal Handicap Grab Bars in Master bath shower and Hall bath tub shower surrounds and at toilets**

G. Install horizontal 4ft & 2ft grab bars in master bath shower and hall bath tub & shower surrounds. Install 4ft on long wall of shower and tub, install 2ft opposite wall of valve and shower head. Check with YANTH to verify locations.

H. 1½"inch stainless steel concealed mount, diamond knurled grip handi-cap grab bars.

3.03 ADJUST AND CLEAN

A. Clean and adjust accessories for proper operation.

END OF SECTION

SECTION 11450
APPLIANCES

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: Submit Manufacturer's specifications and installation instructions.

B. Shop Drawings: Submit drawings showing space requirements, and piping and wiring rough-in locations for gas, water, power, and for ductwork.

C. Samples: Submit samples or brochures showing color selection.

D. Operating and Maintenance: Submit 2 copies of Manufacturer's instructions for operating and maintaining equipment.

1.02 DELIVERY, STORAGE AND HANDLING

A. Packing and Shipping: Deliver materials to site in Manufacturer's original unopened packaging with labels intact.

B. Storage: Adequately protect against damage while stored at the site.

C. Handling: Comply with Manufacturer's instructions.

1.03 WARRANTY

A. Furnish Manufacturer's standard warranty.

PART 2 PRODUCTS - TO BE DETERMINED BY YANTH

2.01 RESIDENTIAL EQUIPMENT

A. Splash Plates: 24" X 30" stainless steel back splash.

B. Refrigerator:

C. Range:

D. Range Hood:

E. Front loading Washer and Electric Dryer (Tier 2 or greater)

END OF SECTION

SECTION 11900
RESIDENTIAL EQUIPMENT AND SPECIALTIES

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Work includes, but is not necessarily limited to residential equipment and specialties as shown on drawings and as specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.

B. Finish Hardware …….. Section 08710

C. Bathroom Accessories ……. Section 10800

C. Appliances ……..Section 11450

1.03 WORK INCLUDED

A. Provide and install one each of the following:
   1. Range, range hood and splash plate
   2. One shower curtain at each tub and shower
   3. Wood Closet Rods in all clothes closets

1.04 SUBMITTALS

A. Manufacturer's instructions and owner's manuals.

PART 2 PRODUCTS

2.01 SPLASH PLATES - 24" X 30" Stainless steel

SECTION 11900
RESIDENTIAL EQUIPMENT AND SPECIALTIES

2.02 SHOWER CURTAINS – (bathtubs and showers) heavyweight vinyl curtain, 5 gage Vinsoft #VS5700, Color: Frosty with steel pin chrome hooks.

2.04 CLOSET RODS - rod support at center for all clothes rods over 4 ft. long. Wood dole rods, 1 3/8” Diameter.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine the areas and conditions under which work of this section will be installed. Correct conditions detrimental to proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 COORDINATION

A. Ensure proper and adequate provisions for concealed support devices and for finished openings to receive the work of this section.

B. Coordinate installation of blocking specified in Section 01600, Rough Carpentry paragraph 3.02, F. 1 & 2.

3.03 INSTALLATION

A. Install the work in this section in strict accordance with manufacturer's instructions.

B. Anchor all components plumb, level, square and firmly in position.

C. Adjust to operate properly.

END OF SECTION

SECTION 12370
WOOD CABINETS & COUNTERTOPS

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Work includes kitchen cabinets and bathroom vanities as indicated on the drawings and includes all cabinets and solid surface countertops.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and general Requirements apply to the work specified in this section.

B. Coordinate application of required stripping, blocking, nailers and rough bases not part of cabinets.

C. Rough Carpentry ……..Section 06100.

D. Finish Carpentry…… Section 06200.

1.03 QUALITY ASSURANCE

A. Kitchen Cabinet Standard: ANSI AI61.1.

B. Counter tops to be Formica with 4” backsplash (if applicable) or approved equal

C. Field Measurements: Verify sizes and shapes of countertops prior to fabrication by field measurements after installation of base cabinets.

1.04 SUBMITTALS

A. Shop Drawings
1. Submit shop drawings in accord with Contract Conditions for all wood cabinets, identified with location, quality grade, type of finish and species of wood.
2. Submit shop cuts of all related hardware.

SECTION 12370
WOOD CABINETS

1.05 DELIVERY, STORAGE AND HANDLING

A. Defer delivery to the job until the installation and storage areas are complete and dry of all wet-type construction.

B. Protect all surfaces of cabinets subject to damage while in transit.

PART 2 PRODUCTS

2.01 QUALITY GRADE

Hard wood cabinets color to be selected. Prior approval before bidding, provide samples of doors and drawers fronts to YANTH

B. Quality Assurance: Must meet ANSI A161.1 as revised in 1995.

1. *Drawer:* ALL SIDES ARE TO BE PLYWOOD MININMUM OF 3/8" THICK 7 PLY. THE FLOOR IS TO BE 1/4"PLYWOOD, THAT IS DADOED INTO THE DRAWER SIDES. THE SIDES ARE DOVETAIL JOINT. THE DRAWER IS TO BE 4" DEEP, ON THE INTERIOR.
2. *Drawer System:* SIDE or BOTTOM MOUNTED DRAWER GUIDES THAT ARE EPOXY COATED AND ARE RATED AT 100 POUND CAPACITY. THE DRAWER GUIDES MUST HAVE A LIFETIME WARRANTY.
3. *Door and Drawer Front:* SOLID 3/4" HARDWOOD, OF ,KILN DRIED STOCK, ONLY WILL BE USED IN THE CONSTRUCTION OF THE DOOR AND DRAWER FRONT PARTS. THE DOORS WILL BE RAISED PANEL ON UPPER DOORS. DOORS WILL BE OF SAME GRADE ON FRONT AND BACK OF DOORS. THE DOORFRAME WILL BE JOINTED WITH A MORTISE AND TENON JOINT (NO MITERED CORNERS WILL BE ACCEPTED.) THE DOORS SHALL BE MOUNTED TO THE CABINET WITH A SPRING LOADED, SELF- CLOSING, WRAP AROUND HINGE. ALL DOORS ARE TO HAVE BUMPER PADS. THE DRAWER FRONTS ARE TO BE SOLID AND MAY BE MADE OF GLUE STOCK. THE DOORS AND DRAWERS ARE TO FEATURE A REVERSED BEVEL EDGE FOR EASE OF OPENING.
4. *Wood Species:* THE WOOD SHALL BE A HARDWOOD.

SECTION 12370
WOOD CABINETS

5. *Cabinet Assembly:* ALL PARTS ARE PRECISION MACHINED, THEN GLUED AND SCREWED TOGETHER. CORNER GUSSETS ARE TO BE PRICISION MADE TO ASSURE AN ACCURATE 90-DEGREE CORNER. (SHOP MADE CORNER GUSSETS WILL BE ACCEPTABLE.) THE GUSSET IS SOLELY FOR THE PURPOSE OF SQUARING THE CABINETS AND IS NOT USED TO MOUNT THE COUNTER TOPS TOTHE BASE CABINETS.
6. *Materials:* FACE FRAMES 3/4" KILN DRIED. STILES AND RAILS ARE 1 3/4" WIDE, WITH THE EXCEPTION OF CENTER STILES WHICH WILL BE 3"INCH WIDE. FRAMES ARE POWER SCREWED, WITH CASE HARDEDED WOOD SCREWS, WHILE CLAMPED ON A SQUARING TABLE TO ASSURE A JOINT THAT IS SQUARE AND WILL NOT SEPARATE. END AND SIDE PANELS, SHELVES, TOPS AND FLOORS ARE TO HAVE A MINIMUM THICKNESS OF A 1/2"INCH PARTICLEBOARD JOINED TOGETHER WITH DADO JOINTS IN THE SIDE PANELS AND FACE FRAMES
7. *Tops:* PROVIDE ½” INCH SUB TOP PARTICLE BOARD OR PLYWOOD BUILD UP FOR COUNTERTOP. COUNTERTOP TO BE SOLID SURFACE. Color to be selected from submittals.

SECTION 12370
WOOD CABINETS

PART 3 EXECUTION

3.01 CONDITON OF SURFACES

A. Examine all grounds, stripping and blocking to secure cabinets.

B. Do not install until all defects are corrected.

3.02 INSTALLATION

A. Qualifications of installers: Installation by skilled workmen completely familiar with the specified requirements and methods needed for the proper performance of work of this section.

B. Install cabinets plumb and level without distortion.

C. Shim as necessary with concealed shims.

D. Accurately scribe and closely fit all face plates, trim strips and scribe edges of countertops to irregularities of adjacent surfaces.

E. Provide fastening strips to be secured to studs with screws penetrating studs a minimum of 2" at each stud. Provide 2 x blocking between studs to allow at least two (2) fastenings for short cabinet section.

F. Attach sub-tops and counter tops securely to base units. Provide cut outs for fixtures and appliances as indicated. Verify size and shape of countertops prior to fabrication by field measurements after base cabinets are installed.

G. Provide closure panels or strips where voids occur at bottom of wall cabinets where cabinets join. Finish ends of cabinets at refrigerator.

H. Caulk juncture, top of backs plash with wall, and seal around sink cabinet bottom with silicone seal.

END OF SECTION

SECTION 12492
BLINDS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Vertical Blinds as shown on the Drawings and as specified.

1.02 SUBMITTALS

A. Samples: Submit samples of blind materials, colors, and patterns.

B. Certification: Submit Manufacturer's certification for flammability of vertical bland vanes.

1.03 DELIVERY, STORAGE AND HANDLING

A. Packing and Shipping: Deliver materials to site in Manufacturer's original unopened packaging with labels intact.

B. Storage: Adequately protect against damage while stored at the site.

C. Handling: Comply with Manufacturer's instructions.

1.04 PROJECT CONDITIONS

A. Field Measurements: Verify dimensions shown on Drawings by taking field measurements; proper fit and attachment of parts is required.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Furnish products of one of the following Manufacturers, except as otherwise specified approved by the Architect/designer, subject to compliance with Specification requirements:
1. Design view

SECTION 12492
BLINDS

2.02 Vertical BLINDS

A. Brand, Color & Design to be submitted for approval.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Examine sub-surfaces to receive Work and report detrimental conditions in writing to Architect/designer. Commencement of Work will be construed as acceptance of sub-surfaces.

B. Coordination with other Work: Coordinate with other Work which affects, connects with, or will be concealed by this Work.

3.02 INSTALLATION

A. Install window blinds in strict accordance with Manufacturer's instructions. Install straight and plumb, securely fastened, and with horizontal lines level and true with window framing.

B. Evidence of drilling, cutting and fitting to room finish shall be concealed in the finish work. Provide uniform clearance at edges not to exceed 3/16 inch. Adjust hardware for smooth operation.

C. Install blinds between vertical window mullions with discontinuous head channel and slats, allowing independent blind operation for separate glazing units.

3.03 CLEANING

A. During the course of the Work and on completion, remove and dispose of excess materials, equipment and debris away from premises. Leave Work in clean condition.

END OF SECTION

SECTION 15400
PLUMBING

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. The plumbing system for this work includes all sewer service, water service, gas lines, cold water and distribution, domestic water heating distribution, vents and wastes, plumbing fixtures and trim, and other plumbing items indicated on the drawings or described in these specifications, plus all other pluming items needed for a complete and proper installation.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.

B. Earthwork, Excavation, Grading, and Compaction ….. Section 02223.

C. Electrical …….. Section 16000.

1.03 QUALITY ASSURANCE

A. Installations to meet requirements of 2012 International Residential Code.

1.04 SUBMITTALS

A. Four (4) copies of complete list of materials and equipment with names and addresses of manufacturers, catalog, and model numbers, trade names, literature and performance data.

PART 2 MATERIALS

2.01 It is the intention of these specifications to indicate a standard of quality for all materials. Where materials are not specified but are required to complete the installation, use first class materials subject to the Architect/designer's approval. Manufacturer's names and catalog numbers are used to designate the kind of material or

equipment as a means of establishing grade and quality. Manufacturers of similar quality products will be considered unless indicated otherwise. Where two or more similar type items are furnished, all shall be of the same manufacturer.

NOTE: Refer to Architect/design Drawings for General Plumbing notes.

SECTION 15400
PLUMBING

A. **Drain, Waste and Vent:** (choice of the following)
   1. PVC-DWV System IAMPO IS 9-81 PS 27-69, ASTM D-2665- 73
   2. ABS DMV IS5-81, ASTM D-2661- 78.

B. **Exterior Sewer Pipe:** PVC service pipe ASTM D-3034/SDR35 with minimum wall thickness of 0.124 inches.

C. **Water Service to House from Meter:** 5/8" inch Wirsbo.

D. ~~**Gas Piping:** Standard weight wrought iron or steel, galvanized or black, wrapped with "Scotch-rap", or factory applied Scotchkote, wrap joints made in field.~~

E. **Gate Valves and Globe Valves:** Bronze body, non-rising stem, union bonnet, solid disk, 125 psi.

F. **Clean-outs:** 3" ABS or PVC pipe with fitting for pvc plug.

G. **Wall Clean-outs:** Zurn Z-1440-1 with cover, Wade W-8450-R.

H. **Fittings:** All connections to couplings, coopersetters, corp stops and fittings-bronze compression type, Mueller Instatite, Ford Pack Joint with stainless steel insert stiffener if required.

I. **Shut-off (Curb Stop) Valves:**
   1. All valves to have tee heads and stem operating nuts. Provide valve key wrenches, 39" +/- long with a "T" handle.
   2. Valve boxes. ADS shaft extension and ADS Adapter concrete valve box and F8D cover. Two section vertical column box with bottom section adjustable. Mark cover plainly with the word "water". Valve boxes shall be equal to Christy B9X.

J. **Water Service,** which includes service saddle, corporation stop, Wirsbo PEX piping, branch piece, angle meter stops will be installed in accordance with Indian Health Service Standard Specifications. .

SECTION 15400
PLUMBING

K. **Saddle Clamp:** Heavy tapped couplings or rigid, full circle, wide body bronze clamps, Mueller H-134 or Baker series 195.

L. **Corporation Stop:** All bronze with iron pipe size inlet and outlet threads, Mueller H-IOOI2, or equal.

M. **Water Meter:** Water meters and meter boxes will be furnished and installed by the Utility Contractor.

N. **Locator Tape:** 3" wide bonded layer plastic with 1.5 mil metal foil core. Detectotape by Allen Systems, Inc. or Terratape "D" by Griffolyn Company, Inc., blue with continuous printing "CAUTION BURIED WATER LINE BELOW".

O. **Water Meters:** Hayes Acu-meter 1” x 1", 40301 or Precision Meters, Inc. PMM 1' x 1".

P. **Coppersetters:** Hayes 025530

Q. **Meter Boxes:** Christy B3 Box with B3C cover with "WATER" marking on lid or Ametek Superflexon boxes and covers. Provide sufficient section to provide walled enclosure for a minimum depth of 18 inches below the top of the meter. All sections of all boxes and lids shall be nested or otherwise interlocked to prevent lateral movement. Minimum cover opening dimension shall be 10" x 17".

R. **Fittings:** All connections to couplings, coppersetters, corp stops and fittings-bronze compression type, Mueller Instatite, Ford Pack Joint with stainless steel insert stiffener if required.

S. A shut off valve must be placed on both sides of a recirculation pump.

A ½” ball valve is required.

T. All water hearers to be place in a pan that has a drain to exterior.

SECTION 15400
PLUMBING

2.02 FIXTURES AND EQUIPMENT

Provide fixtures and equipment equaling or exceeding the quality of the manufacturer and model numbers listed, complete with all required stops, supplies, backing, drain, trim and other items necessary. All fixtures shall be white, all toilets to be ADA height.

A. See Plumbing Fixture Schedule, on Architect/designer Drawings.

a. Finish fixture to be Delta Single Chrome Lever at kitchen sink. 100LF-WF Model NO SPRAYERS

b. Sink to be 20 ga 22”x33” double bowl stainless steel 8”inch minimum bowl depth, with sound deadening under coat.

c. Garbage Disposal ISC Badger ½ Horse with plug in cord with ground terminal.

d. Finish fixture to be Delta Single Chrome Lever at bathroom lav sink. B510LF-PPU

e. Finish fixture to be Delta Single Chrome Lever Monitors at tub, and showers. Classic Monitor 13 series model 134900 rough & trim for tub and shower. Model 132900 rough & trim for shower only.

f. RUDD Model PRO+E50 T2 RU 95 / 50 gallon electric water heater to be used on 3 and 4 bedroom homes.

g. RUDD Model PRO+E40 T2 RU 95 / 40 gallon electric water heater to be used on 2 bedroom units. N/A

h. Hose bibs Hydrants to be Anti-Siphon Frost free threaded ½ inch inlet pipe. Manufacturer Brand to be **Arrowhead.** No ¼ turn valves. Length will be 10 to 12” inches, must be serviceable not soldered. Threaded connection is required for ease of replacement.

i. All hose bibs to have access panels, minimum 10”inch in size. No larger than 12”inchs. Not to be installed on interior walls unless if located in a closet or utility room. All other panels to be exterior rated and designed for stucco installation.

j. Recirculation pumps to be Grundfo Manufacturer brand, model 59896775 UP15-29SU, supply lines to be Pex.

k. Install a ball valve on each side of recirculation pumps

l. Piping to and from recirculation to be Pex as well as all piping at hot water heater

m. Toilets are to be ADA height

SECTION 15400
PLUMBING

PART 3 EXECUTION

3.01 DRAWINGS

A. The drawings are in general diagrammatic and the location of all fixtures, equipment, piping, etc. do not necessarily mean to locate said items at the exact spot scaled from the drawings, but located to function best.

3.02 INSPECTION

A. Examine the areas and conditions under which work of this Section will be installed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.03 PLUMBING SYSTEM LAYOUT

A. It shall be the responsibility of the Contractor to verify location of all utilities on the site before trenching, with Blue Stake and local utility companies and Tribal Utility Authority. Repair any damage done to utilities during trenching.

3.04 RECORD, AS-BUILT DRAWINGS

A. Provide as-built drawings which clearly show all differences between the contract work as drawn and installed for all concealed work as well as work added to the contract. Maintain a set of record drawings on the job site kept legible and current and available for inspection by the Architect/designer.

3.05 INSTALLATION

A. Excavation, Trenching, Backfilling
1. All materials regardless of character and subsurface conditions shall be excavated so that the pipes are 30” below finish grade.
2. Materials for Bedding: Sand shall be a coarse natural or manufactured sand, free of clay and organic material, and suitable for compaction by jetting.
3. Selected Materials: Shall be defined as materials which are excavated from the project site and are satisfactory for use as backfill insofar as such materials are suitable for compaction, contains no cemented lumps or rock larger than 3" in greatest dimension, is free of topsoil and organic and other deleterious materials, and is approved by the Inspector.

4. Backfilling: Trenches shall not be backfilled until all required pressure tests are performed. Trenches shall be backfilled as hereinafter specified with selected materials that are suitable for the specified compaction then compacted with suitable tampers and methods to 95% density or better.

B. Pipe Installation

1. Follow prints on running hot and cold water piping above ground in insulated envelope of the building in attic below insulation. Keep the house sewer elevation up consistent with slope where sewer mains may be shallow. Check sewer main elevation.
2. Verify all equipment dimensions for rough-in work.
3. Repair any damage to existing lines or structures.
4. Where Wirsbo is being utilized for water supply, copper stub outs shall be provided for angle stops and to secure water line. All pipes in exterior walls and attic spaces shall have R4 insulation wrap .
5. Construct and secure pipe and equipment to prevent vibration and rattling when the system is in operation.
6. Protect pipes passing thru studs with Simpson NS, nail stoppers and where studs are cut, reinforce with Simpson SS/SP. 16ga minimum nail plates
7. Conceal all piping in finished areas.
8. Dielectric Fittings: Install dielectric unions or couplings at joints between ferrous and copper pipes.
9. Escutcheon Plates: Wherever pipes pass through wall, floor, or ceilings, install escutcheon plates, brass split ring with set screws, polished chrome in finished rooms.
10. ***If all possible - Collect all plumbing vents in attic and penetrate roof at one location at the rear of house***.
11. Flashing: Flash piping through roof Use 26 gage. galvanized sheet metal flashing extending 10" around pipe. Seal with plastic cement mastic. No rubber roof jacks, or jacks with rubber seals.
12. Clean-outs: Clean-outs shall be furnished and installed wherever shown on the drawings, at all changes in direction of soil and water pipes and wherever required by local codes or ordinances. All clean-outs shall be accessible.
13. Provide temperature and pressure relief valves for all water heaters and a 3/4" copper gravity drain to exterior.

Pressure Regulator

1. Install pressure regulator at location where water main comes into structure with access panel and a discharge line to exterior of home. Pressure not to exceed 80psi.

SECTION 15400
PLUMBING

C. Installation of Fixtures

1. Fixtures: Set fixtures level and in proper alignment with adjacent walls, set water closets I" maximum from finished wall. Secure all fixtures rigidly. ***Check all connections to equipment and fixtures for tight joints, especially sink and lavatory traps.*** Set self- rimming sinks in putty. Provide chrome escutcheon plates on all supplies, even if they occur in cabinets. Provide fixture stops or valves ahead of all equipment or fixtures. Angle stops that are exposed shall be chrome plated with chrome plated escutcheons.
2. Install tubs and showers in strict accordance with manufacturer's instructions. Scab wood block flush against the tub wall centered between the tub filler and showerhead to ensure that the controls, tub filler and showerheads can be tightened securely. Install tubs and showers level. Reinforce the entire bottoms of the shower with casting plaster. Wet casting plaster compressed with installation of the showers.

D. Equipment Furnished By Others

1. Provide complete rough-in and connection, including stop valves on all supply, and waste piping (condensate lines) for services required for equipment furnished and installed under other sections of this specification or by the YAN.

E. Closing in Un-inspected Work

1. Do not cover up or enclose work until it has been properly and completely inspected and approved. Should any of the work be covered up or enclosed prior to all required inspections and approvals, uncover the work as required, and, after it has been completely inspected and approved, make all repairs and replacements with such materials and workmanship as are necessary to the approval of the Architect/designer, and at no additional cost to the YAN.

F. TESTS

1. Test piping systems after installation and prior to being covered by insulation or building construction. Remove gauges, traps or other apparatus which may be damaged by test pressure before tests are made. Perform tests in section as work progresses. Test in section if piping work will be concealed by construction before piping system completion. Perform pressure tests as many times as necessary until all leaks are repaired and tested.

SECTION 15400
PLUMBING

2. Make no tests except upon formal notice to the Inspector and in his presence. Test equipment as follows:
   Water-hydrostatic water test at working pressure which could be 80psi max and test pressure not to be less than 50 p.s.i. air pressure. Piping to withstand leaking for a period of fifteen minutes. Soil, waste and vent-10ft. static head or highest vent. Hold test for no less than fifteen minutes.
3. Furnish all labor, test equipment, supplies and appliances for the tests, and pay all expenses of said tests.
4. If these tests show that the work is in any way defective or at variance with specification requirements, make all necessary changes and remedy all defects.

Mandatory water conservation devices shall include the following:

Toilet 1.1 GPF
Showerheads 1.75 GPM
Kitchen Faucets 2.0 GPM
Bathroom Faucets .5 GPM

END OF SECTION

SECTION 15650
HEATING, VENTILATING, AIR CONDITIONING

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Work includes but not necessarily limited to heating, ventilating and air conditioning as specified herein and as shown on the drawings.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.

B. Plumbing…….. Section 15400.

C. Electrical ……. Section 16000.

D. Mechanical General Notes……See Architect/designerural Drawings.

1.03 QUALITY ASSURANCE

A. Comply with 2012 International Residential Code.

B. Comply with 2012 International Energy Conservation Code (IECC).

C. Conformance with the Specification will be tested by the Arizona Department of Commerce, Energy Office. Any corrections that need to be made shall be done by the Contractor at no additional cost.

D. Warranty to be 2 years minmum on parts and labor. Include manufacturers 5 to 10 year on parts.

1.04 SUBMITTALS

A. Manufacturer's literature
1. Name and catalog number.
2. Description, drawings or photographs.
3. Installation instructions
4. Operation manual.

PART 2 PRODUCTS

2.01 MATERIALS

A. Substitution of equipment brands other than as noted shall be subject to the approval of the Architect/designer.

2.02 EQUIPMENT

A. See Architect/designer/Mechanical/Plumbing Drawings for equipment schedules.

B. Energy Efficiency Requirements:
1. A/C: 14 SEER Rudd or Rheem Split System – Correctly sized for home.
2. Heat Pump: 14 SEER & 8 HSPF

PART 3 EXECUTION

3.01 NOISE REQUIREMENTS

A. All equipment, housing, ducts, piping, etc., shall be quiet and free from vibration when the system is in operation.

Connections to equipment shall be so constructed that noise and vibration will not reach the conditioned areas of building structure.

3.02 SHEET METAL WORK

A. The Contractor shall furnish and install all sheet metal work indicated on the drawings, including, plenums, fittings, grille collars, hangers, air control devices, flashing, dryer vents, etc. as shown and as specified herein.

B. All ducts, plenums, etc., shall be constructed of galvanized sheet iron, equal to Armco, conforming to SMACNA and ASHRAE Guide and Data book.

C. Duct Construction:

1. All duct construction shall be in accord with ASHRAE Guide recommendations as to reinforcing, joints, connections, etc. Longitudinal seams shall be Pittsburgh or Government lock. Cross break all panels.
2. Elbows shall be round where possible. Centerline radii shall be not less than 1-1/2 times duct width. Where noted, or where space limitations exist, square turns will be allowed but approved turning blade shall be installed.
3. Access doors: Sheet metal hinged doors, airtight with felt stripping and latch.
3. Clean all ductwork of foreign materials before installing grilles or registers.
4. All joints in air distribution system shall be sealed with Duct Mastic or approved equivalent. Duct tape is not allowed.
5. Total duct leakage in CFM, measured at 25 Pascals pressure, shall be less than or equal to 3% of the square footage served by the system.

6. Provide a main rigid insulated trunk line sized correctly for return air. No flex duct allowed for return air.
7. Provide a return air for main body of the house in the hallway and a return air for master bedroom.
8. Provide a main rigid insulated trunk line sized correctly that will run through the main body of the housie in which the individual supply can branch off from with a minimal length of flex used for each room.
9. Keep kitchen supply duct away from range.
10. Provide jumper ducts for all bedrooms that do not have returns that will jump into main hallway or per plan.

11. Jumper duct sized needs to be at least 4” inches bigger than supply duct size to reduce over positive room pressure.
12. All mechanical work including rigid and flex duct work shall be taped and mastic to prevent air leakage.
13. Install a new duct system.

D. All ducts shall be insulated with minimum R-8 insulation throughout.

3.03 THERMOSTAT: Provide wiring and connections for temperature control. Install in accordance with manufacturer's recommendations. Install thermostat 4' -6" from floor. Not to be operated by batteries. See Drawings for location. **Note Non Programmable Thermastats**.

3.04 BALANCING SYSTEM

A. Upon completion, balance all registers consistent with room size. Provide report to Architect/designer as part of Close Out Documents.

B. Airflow to each room shall match design airflow calculations to within +/- 10%.

C. Under normal operating conditions, air handler shall not create room pressures greater than +/- 3 Pascals, with reference to the outside air, anywhere in the residence.

D. Supply and return ducts shall be insulated to a minimum of R-8.

E. All work is subjected to the weatherization program and will be tested for air balance and leakage.

3.05 MAINTENANCE MATERIAL

A. Provide 2 extra filters per unit.

B. Install all units with access panels away from walls for ease of service.

END OF SECTION

SECTION 16000
ELECTRICAL

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Electrical work required for this work is shown on the drawings and includes, but is not necessarily limited to:

1. Main distribution panel with metering equipment and feeder switches or circuit breakers – 200 amp required.
2. Complete branch circuit wiring system for lighting, motors, receptacles, junction boxes, and similar uses.
3. Lightning fixtures, wall switches, receptacles, and similar items.
4. Wiring to, and connections of, lighting fixtures.
5. Provide all required electrical connections and service to items described in all other section of these specifications.
6. Wiring and outlet for telephone.
7. Provide electrical dryer outlets in all houses.
8. Wiring and outlet plate for cable TV.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including the General Conditions, Special Conditions, and General Requirements apply to the work specified in this section.

B. Rough Carpentry …… Section 06100.

C. Plumbing…….. Section 15400.

D. Heating, Ventilating, Air Conditioning …….. Section 15650.

E. Electrical General Notes……..See Architect/designerural Drawings.

1.03 QUALITY ASSURANCE

A. Comply with 2012 International Residential Code.

B. Listed by or bear Underwriter's label of approval.

C. Comply with ASNI, AIEE and NEMA standards.

D. Comply with local Utility Company regulations.

SECTION 16000
ELECTRICAL

1.04 SUBMITTALS

A. Manufacturer's literature:
1. Name and catalog number.
2. Description, drawing or photograph.
3. Installation instructions.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver fixtures and equipment in manufacturer's boxes.

B. Store materials on site in enclosed, protected areas.

PART 2 PRODUCTS

2.01 MATERIALS

A. Combination Service Entrance Device
1. Meter socket load centers, single phase, three wire 120/240 volts, surface mounted or semi-recessed, rain-tight, size as indicated on drawings. General Electric Powermark, Bryant, Square D, Eaton, Cutler Hammer, Siemens, or equal.
2. Circuit Directory: Typed or printed circuits.
3. All service panels to be APS approved. Check their list.

B. Conduit, underground and in slab.
1. Non-metallic, Type II, thick wall, polyvinyl chloride (PVC) Schedule 40 or
2. Rigid conduit, standard weight, galvanized.

C. Outlet Boxes
1. Plastic nail-on.

Light Boxes **No Plastic Boxes to be used at ceiling.!!!**
2. Ceiling rated metal boxes to be screwed to solid wood framing members not less than 2x4 nominal lumber. No adjustable metal brackets. Ceiling Fan rated boxes for bedrooms, living, dining, family rooms. Also to include front and back porches. All installation of ceiling boxes to be rigid and tight, and recessed correctly for drywall.

D. Wire and cable
1. Copper wire, insulated for 600 volts, size No.6 and larger stranded, No.8 and smaller, solid.
2. Type NM Non-metallic sheathed cable with ground for lighting and receptacle branch circuits.

a. Outlet Conductors: 12 gauge wire minimum, protected by 20 amp circuit breakers.
b. Lighting Conductors 12 gauge wire minimum protected by 15 amp circuit breakers.

3. Telephone: Nonplenum Category 3, 1010 Lan Cable.

E. Cable Television wiring
1. CATV Coaxial cable 75 OHM RG59U 20 AWG.

F. Ground Fault Interrupters
1. 20amp GFCI where ground fault interrupters are specified - **Levitons**

G. Smoke/CO2 Detector
1. GTE Sylvania, BRK Electronics, a division of Pitt way Corp. Model 1769AC-I; Honeywell TC49A or Fyrenetics Lifesaver; conform to UL 217 standards.

H. Wiring Devices (white color) (**Levitions**)
1. Switches: Quiet type, standard grade. (**2653-2**)
2. Receptacles: Standard grade, two pole, 3 wire grounding type, 20 amp. (**12650-1**)
3. Wall plates: Standard, grade, smooth (**80503-1**) plastic plates; gang for multiple switches.

I. Lighting Fixtures:
1. Furnish, install and connect lighting fixtures as indicated on Fixture Schedule and drawings at all lighting outlets, complete with all glassware, fitters, sockets, canopies, reflectors, wiring, hangers and accessories necessary to complete installation. UL label for required location and usage.
2. Lights at front of garage to be dusk to dawn controlled by a sensor located above the breaker box at side of house.
3. Provide a “Ring” doorbell camera at front door.

J. Lamps:
1. Furnish and install all lamps as required for each fixture. Acceptable manufacturers: Sylvania, General Electric. Use CFL or Led type lamps Must meet ENERGY STAR requirements. Must be “Screw In” bulbs.

K. Exhaust Fan
1. AirZone PA 1100V 110 cfm 1.3 sones hardwired to light switch.
2. * Nutone AERN 110 cfm 1.0 sones hardwired to light switch. Exhaust fans to have at least 110 cfm or better and not to exceed 1.3 sones on noise level.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. Electrical service to house shall be underground.

B. GFI outlets are to be on their own circuit

C. Smoke detectors are to be on their own circuit

Solar

~~Includes individual units to be roof top Grid Tied, Solar Voltaic Systems 310-Watt Mono Crystalline Solar Modules, APS Micro Inverters, Engineered racking systems, and all associated conduit, wiring, disconnects, metering and labeling for a complete operating system.~~

~~15 Duplex Buildings using (30) 3.1KW Roof-top systems including:~~

~~(30) 310-Watt Panels and (150) APS Inverters 93 KW~~

~~(10 panels, 5 inverters per unit on each duplex unit 3.1 KW)~~

~~5 Single Family Buildings using (5) 3.72 KW Roof-top Systems including:~~

~~(60) 310-Watt Panels and (30) APS Inverters providing a total of 18.6 KW~~

~~(12 panels, 6 inverters, 3.72 KW)~~

~~Estimated annual KWH Production 188,604 Kilowatt~~

Design Build Solar Design- Based on 5.7 kw array at 3 bedroom homes, 6.6 kw array at 4 bedroom homes, and 4 kw at each side of the duplex units.

SECTION 16000
ELECTRICAL

B. Install all work in accordance with 2018 International Residential Code, National Electric Code and Arizona Public Service (APS). Comply with regulations of and coordinate work with servicing utility.

C. Drawings and Specifications: Electrical system layout is generally diagrammatic and location of outlets and equipment are approximate; structural condition and work of other trades shall govern exact routing of raceways, cables and wiring, location of outlets and equipment. Notify Architect/designer of any conflict between drawings and actual construction. His interpretation shall be final.

D. Wiring: Run concealed, generally in furred spaces, walls, partitions, chases or attic space, complete with hangers, supports, sleeves in neat and workmanlike manner.

E. Splices: No.1 0 wire or smaller; twist on insulating connections, 3M Scotchlock Type R or Ideal wing nuts, No.8 wire or No.6 wire, pressure screw type connectors. Wires larger than No.6; solder less lugs.

F. Taping of joints: 3M vinyl plastic tape.

G. Boxes: Install rigid and true firmly fastened to structure set flush with finished surfaces.

H. Provide circuit identification in each panel door neatly lettered with permanent marking ink. Make one approved sample before continuing.

I. Rough-in and make final connection to equipment furnished by others.

J. Grounding:
   1. The electrical service, conduit system, cable system fixture motor frames, etc., shall be permanently and efficiently grounded per IRC and Utility Co. requirements. Grounding shall be by concrete enclosed electrode (UFER ground) Minimum 20 ft. of#4 A WG copper wire encased in concrete footing connected to bottom horizontal rebar. Run rest of wire concealed in wall.

K. Provide 20 amp ground fault interrupter receptacle at each receptacle for bathrooms. Kitchens receptacles can be wired in the feed through mode with the controlling GFI receptacle located in kitchen.
   1. Provide arc fault interrupter circuits for all bedroom receptacles.

2. Provide GFI at all exterior locations – including. Carports and garages.
3. All countertop receptacles must be GFI protected.

L. Telephone:

1. Run parallel 2 pairs of Cat 5 to master bedroom, living room, and family room. Run 1 cat 5 to other bedrooms. Conductor telephone wire concealed from network interface to modular jacks where shown. Terminate wire at side of house extending out at least 3 feet, where electric meter and telephone protector is located. Excess wire to be concealed in weather protected box.

M. Television Cable:

1. Run cable wiring separately to each TV outlet and terminate wire at side of house extending out at least 3 feet, where electric meter and telephone protector is located. Excess wire to be concealed in weather protected box. Extend cable 36" outside house, protect until connection is made by Cable TV Co. Provide telephone outlet plate at termination inside house with 8 ft. coil of cable.

N. Smoke/CO2 detectors

1. Smoke/CO2 detectors required in all each sleeping room, outside each separate sleeping area in the immediate vicinity of the bedrooms. Also other locations specified in the International Building Code, IRC, code book.

3.02 FIELD QUALITY CONTROL

A. Upon completion of this portion of the work, test all parts of the electrical system in the presence of the Architect/designer. Demonstrate that all equipment furnished, installed, and/or connected under this Section of these Specifications functions electrically in the required manner.

B. Test Requirements

1. Tests: Perform continuity and insulation resistance tests on all wiring systems and operational tests on all completed electrical systems and equipment prior to acceptance by Owner. It is the responsibility of electrical contractor to certify that the Resistance of Made Electrodes to ground does not exceed 25 ohms. These ground resistance tests should be made during the non-rainy season.
2. Test all conduits for proper neutral connections.

C. Record Drawing Documentation

1. Locate all monuments and label.
2. Plot, by detector check of tracer wire, all underground conduits.
3. Designate all circuiting control of fixtures, outlets and other electrical components.

3.03 CLEANING AND ADJUSTMENT

A. Clean-up

END OF SECTION
ENERGY MANAGEMENT

PART 1 FRAMING

1.01 AIR BARRIERS:

A. Drop soffits

B. Dropped ceilings for closets

C. Chases and shafts for ductwork, plumbing and utilities

D. Floor trusses that connect to the attic or outside

E. Drop soffits for ductwork

1. All these areas must be capped and sealed with a rigid material such as OSB, plywood, or drywall to insure a continuous 3C barrier.
   a. A 3C barrier is **C**ontinuous, we mean there is no breaks in the thermal barrier, **C**ontiguous, we mean that all components of the barriers must be in physical contact with each other, **C**omplete; we mean that the barriers should be installed together in such a way that they completely contain the living environment of the house.
   Note: The drop soffit containing the ductwork is being used for the HVAC return air path from all the bedrooms to the main body of the house. The soffit will be accessed from the bedrooms and a pass thru register will be installed. A pass thru register will also be installed in the main body of the house. With the bedrooms doors closed the HVAC air will be able to enter the room and then pass thru the drop soffits as it returns to the HVAC system thus making the soffit a critical piece of the HVAC system. The specifications for these soffits are to make them air tight. If there is any air leakage to the attic, the soffit will be rendered unusable.

1.02 WINDOW SPECIFICATIONS

A. All windows will meet or exceed:

1. U-Factor of 0.60.

2. Solar heat gain coefficient of 0.38.
3. Visible transmittance of 0.57.

1.03 HEATING AND AIR CONDITIONING SYSTEMS

A. Duct work installation:

1. Mechanical contractor to supply Manual-J analysis and duct layouts.
2. The duct system shall be constructed of rigid metal ducting.
3. Water-based Latex mastic with at least 50% solids reinforced with fiberglass mesh at all duct connections, joints, and seams shall be used.

ENERGY MANAGEMENT

4. All ductwork will be insulated with a minimum R-8 duct wrap with foil vapor jacket.
5. A 6” fresh air supply duct will be installed into the main body return with an adjustable damper and washable filter.
6. All supply registers require adjustable dampers in order to properly balance the airflow and provide the specified cfm at each location.
7. Airflow to each room will match designed airflow calculations within +/- 10%.
8. The total duct leakage shall not exceed 3% of the house floor area.
9. No pressures with a magnitude of +/- 3.0 Pascal’s with reference to the outside may be created by the HVAC system with the structure.
10. The thermostat requires run time monitoring and ventilation features.
11. If any portion of the duct system is outside the thermal envelope, total duct leakage measured in cfm 25 pascals pressure shall be less than equal to 4 cfm to outdoors/100 sq. ft. of conditioned floor area.
12. Flex duct:
    a. Seal the start collar to the plenum using mastic reinforced with mesh around the entire circumference.
    b. At all connections (triangles, junctions boxes, etc.), fastening the inner liner to the start collar using a mechanically tightened draw band for mechanical strength.
    c. Seal the inner linear using approved mastic reinforced with fiberglass mesh and overlaid with another layer of mastic sufficient to cover the entire pattern of mesh.
    d. Fasten the outer liner well over the start collar using a mechanically tightened draw band.

e. Seal all boots to the sheetrock using mastic or silicone caulk applied at the point where the air barrier (metal or exterior foil backing) meets the sheetrock.

13. Duct board
    a. Staple all duct board joints with appropriate staples every two inches.
    b. Apply a layer of mastic; embed reinforcing mesh and overcoat with another layer of mastic sufficiently thick to hide the pattern in the tape.
    c. Allow for proper curing (manufacture's specifications) before starting the system. This is critical.
    d. Seal all boots to the sheetrock at the point where the foil backing meets the sheetrock.

ENERGY MANAGEMENT

14. Metal
    a. Seal all points where components join together using mastic. Special attention must be given to any area where tabs provide the method of securing the joint.
    b. Seal all boots to the sheetrock at the point where the metal meets the sheetrock.
    c. Join all components with screws or other mechanical fastening devices as required in listing or code.
15. Building cavities used as returns
    a. If the cavity is lined with sheetrock, seal all joints with mastic. All gaps over ¼ inch must be reinforced with embedded mesh tape.
    b. If the cavity is lined with duct board with the fiberglass side facing inside, a positive air barrier must be created in the plenum by covering the fiberglass with a material such as sheet rock, duct board and the foil facing inside, or coat the fiberglass with mastic.
    c. If the cavity is unlined (exposed studs) and it is impossible to line the plenum, seal all joints, holes and penetrations using mastic applied with a brush attached to a handle or other extension. It may easier and more effective to simply create a ducted plenum or chase and avoid the problems associated with using a building cavity to convey conditioned air.
16. Air handler
    a. Seal all penetrations and gaps between materials using mastic. If the gap is over ¼" reinforce with fiberglass mesh.

b. Seal the areas where the air handler meets the supply/return plenums using mastic reinforced with fiberglass mesh.
c. Seal any panels that will require frequent access by the owner (such as the filter area), using a quality temporary tape (duct tape).
d. The air handler must not have any noticeable leaks.

17. Wall penetrations
The most common wall penetration problem is where the Opening for the return grille is cut through the wall. In such an Installation, even in a lined plenum, the wall cavity is open into the plenum.)
a. Where an unducted section of the air distribution system penetrates a wall cavity, the wall cavity must be sealed.
b. The cavity will first be blocked using a rigid air barrier such as sheetrock or duct board with the foil facing the airflow.
c. All seams, cracks, crevices and openings will then be sealed airtight using approved mastic.

ENERGY MANAGEMENT

B. Product Specifications

1. Duct sealing materials must have high cohesive and adhesive qualities with at least 50% solid
2. The ducts shall be attached per the manufactures specifications utilizing plumping straps or screws that will provide a strong mechanical connection.
3. Foil tapes, including UL 181 AP-type tapes, when used alone are not acceptable. The tape must be overlaid with a coating mastic that is thick enough to completely cover the tape and extends at least 1” past the tape on all sides.
4. Materials must meet all current codes and manufacture’s specifications.
5. Duct sealing materials shall have both excellent cohesive and adhesive qualities.
6. Water-based latex mastic with at least 50% solids reinforced with fiberglass mesh at all duct connections, joints and seams shall be used. “Hard cast” type mastic with reinforcing mesh is also acceptable.
7. The ducts shall be further attached as per manufactures specification, using a draw tie, plumbing strap or screws, as appropriate for a strong mechanical connection. The mechanical connection does not replace air sealing.
8. Foil tapes, including UL 181 AP-type tapes, when used alone are not acceptable. If tape is used to temporarily hold a seam,

it must be overlaid with a coating of mastic that extends at least one inch past the tape on all sides, and is thick enough to hide the tape completely.

9. Do not use materials that are potentially damaging or have harmful effects, such as toxic vapors or carcinogenic substances that may be harmful to the occupants of the home or the installer. Entities are required to obtain and maintain the Material Safety Data Sheet (MSDS) for all materials used on the job. You may be asked to provide the data sheets when a question arises. Federal law requires the procedure; further information is available locally from the vendor.
10. Materials must meet all current codes and manufacturer's specifications.

1.04 PRE-DRYWALL/PRE-INSULATION

A. Infiltration sources and sealing

1. All holes in the top plates interior and exterior walls, i.e., (electrical, plumbing, etc.) need to be sealed with expandable foam (minimum of double expanding) or caulking. Be sure that the sealing product used makes a good seal all the way around the intrusion.

ENERGY MANAGEMENT

2. All exterior wall bottom plates where it meets the concrete slab and on top of the plate where it meets the backer board. Seal these areas with a silicone based caulking. Rub down bead to insure a good cohesion and seal.
3. All holes cut into drop soffits, drop ceilings, chases and shafts. All these areas need to be sealed with expandable foam (minimum of double expanding) or caulking.

Note: If the area to be sealed is larger than a ½", the procedures outlined above will not make a permanent seal. These areas should be sealed with fiber reinforced cloth and a lagging adhesive. Cut or drill holes slightly larger than usual this makes it easier to seal.

1.05 PRE-INSULATION

A. Infiltration sources and sealing

1. Recessed lights – newer recessed lights are air-tight (AT) and have the ability to be in contact with the insulation (IC – insulation contact). Caulk around the junction between the light and the ceilings drywall.

2. Heating and cooling system – seal all HVAC penetrations, such as refrigeration lines, supply and return grill penetrations, and thermostat wire holes.
3. Plumbing – The drains and water inlet pipes under the sink are typical leakage locations. Fill the gap between the drain and pipe and the wallboard with caulk or foam.
4. Dryer exhaust, gas pipe and refrigerator water – all penetrations are potential air leakage areas. The trim plate for the refrigeration water line needs to be caulked around its edges and firmly set in place to be airtight.
5. Outlets – electrical outlets and switch plates all leak a little, however, the air that passes through these comes from openings such as top plate and other exterior wall penetrations. Take care of the basic air sealing, and outlet gaskets will not be needed.

1.06 INSULATION

There are three barriers used when insulating a home. There is the thermal barrier which is the insulation, the air barrier that can include the sheathing, drywall, foam, caulk, and gaskets, and the moisture barrier which is a combination of the thermal barrier and the air barrier. These three barriers are referred to as a 3C barrier.

A. Use a 3C barrier as follows:

1. Must be continuous with no breaks in the air thermal barriers.

ENERGY MANAGEMENT

2. Must be contiguous with all components of the two barriers being in physical contact with each other.
3. The barriers are to be installed together to insure that the living environment of the house is completely contained.

B. In order to ensure the efficiency of the 3C barriers, the following installation errors must be avoided:

1. Misalignment, which occurs when insulation and the other components of the 3C barriers do not touch.
2. Gaps and voids where insulation should be installed, but isn’t.

3. Thermal bypass, where air or heat can flow through or around the insulation. This is generally caused by misalignment, gaps, and voids.
4. Compression, which is the reduction in the specified density of the insulation.
5. Wind intrusion, which refers to natural wind flowing through the insulation. A common cause of this is the use of bird holes in the eaves of the roof. Air baffles must be installed at all eaves in order to avoid wind intrusion.

1.07 INSPECTIONS AND TESTING

A. Framing, air sealing, air and thermal barrier inspections will be performed in stages and approved prior to continuance of building.

B. All pressure balancing, duct leakage, whole house cfm testing will be performed by a designated testing organization.

C. Tests will be performed and recorded using adequate equipment and software.

D. All items on the Thermal Bypass Inspection checklist must be verified. The checklist includes the following 12 items:

1. Shower/tub at exterior wall: exterior walls behind tub or shower have been fully insulated. Exterior walls behind tub and shower have been faced with air barrier material.
2. Insulated floor above garage: floor framing is completely filled with insulation or insulation is snug against sub-floor. Air Barriers are installed at any exposed edges of insulation.
3. Attic knee wall air barriers are installed on attic side of insulated wall. Insulation is in complete alignment with interior wall finish.

ENERGY MANAGEMENT

4. Attic hatch/drop-down stair attic: opening is fully gasketed for an air-tight fit. Hatch is covered with insulation that is attached and fits snugly in framed opening.
5. Cantilevered floor: Floor framing is completely filled with insulation in snug against sub-floor. Air barrier installed at any exposed edges of insulation.
6. Duct shafts: opening is enclosed as required with flashing and any remaining gaps are sealed with caulk or foam.
7. Flue shaft: opening is fully enclosed as required with flashing. Combination clearance between flue and combustible flashing (e.g., OSB panel) are properly closed with metal collars and any remaining gaps are sealed with fire-proof caulk or foam.

8. Piping shaft/penetrations: opening is fully enclosed as required with flashing and any remaining gaps are sealed with caulk or foam.
9. Dropped ceiling/soffit air barriers are fully aligned with insulated framing and any gaps are fully sealed with caulk or foam.
10. Fireplace wall: air barrier is fully aligned with insulated framing in framed shaft behind fireplace and any gaps are fully sealed with caulk or foam.
11. Staircase framing at exterior walls/attic: air barriers are fully aligned with insulated framing and any gaps are fully sealed with caulk or foam.
12. Whole-house fan attic penetration: an insulated cover is provided that is gasketed to the framing opening.

1.08 INDOOR AIR QUALITY

A. All combustion appliances in the conditioned space must be vented to the outside.

B. All UL listed carbon monoxide detector (Underwriters Laboratories 2034-98) shall be installed in all structures with an attached garage or a combustion appliance located in the conditioned space.

C. To ensure consistent exchange of indoor air, installation of a mechanical ventilation system that meets the minimum requirements of ASHRAE Standard 62.2 is required.

END OF SECTION