2.9 REPAIR MATERIALS A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations. 1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219. 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application. 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse 4. Compressive Strength: Not less than 4100 psi (29 MPa) at 28 days when tested according to ASTM C 109/C 109M. ir Overlayment: 'Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch (3.2 mm) and that can be feathered at edges to match adjacent floor elevations. 1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and

3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch (3.2 to 6 mm) or coarse sand as recommended by topping manufacturer. 4. Compressive Strength: Not less than 5000 psi (34.5 Mpa) at 28 days when tested according to ASTM C 109/C 109M. 2.10 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301. 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows: 1. Fly Ash: 10 percent.

3. Ground Granulated Blast-Furnace Slag: 10 percent. 4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 10 percent portland cement minimum, with fly ash or pozzolan not exceeding 10 percent. C. Admixtures: Use admixtures according to manufacturer's written instructions. 1. Use water-reducing and/or high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability. 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions. 3. Use water-reducing admixture in pumped concrete, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.45. D. Color Pigment: (arch verify if Pigment is required.) Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete

2.11 CONCRETE MIXTURES FOR BUILDING ELEMENTS A. Piers: Proportion normal-weight concrete mixture as follows:

Combined Fly Ash and Pozzolan: 10 percent.

1. Minimum Compressive Strength: 3000 psi (20.7 MPa) at 28 days. . Maximum Water—Cementitious Materials Ratio: 0.50. Slump Limit, before adding high-range water-reducing admixture or plasticizing admixture plus or minus 1 inch:

a. 6 inches (150 mm) for dry hole methods. 8 inched (200 mm) for temporary-casing drilling methods Do not air entrain concrete for drilled piers.

. Aggregate: Normal weight: ASTM D44 a. Coarse Aggregate: Size No. 57 (1" to No. 4).

B. Footings: Proportion normal—weight concrete mixture as follows: . Minimum Compressive Strength: 3000 psi (20.7 MPa) at 28 days

2. Maximum Water—Cementitious Materials Ratio 0.45 3. Slump Limit: 5 inches (125 mm) before adding high-range water-reducing admixture or plasticizing admixture plus or minus 1 inch (25 mm). 4. Air Content: 5-1/2 percent, plus or minus 1.5 percent at point of delivery for

1-1/2-inch (38-mm) nominal maximum aggregate size. 5. Aggregate: Normal weight: ASTM D448; a. Coarse Aggregate : Size No. 57 (1" to No. 4). Slabs-on-Grade: Proportion normal-weight concrete mixture as follows: . Minimum Compressive Strength: 3000 psi (20.7 MPa) at 28 days. Maximum Water-Cementitious Materials Ratio: 0.45 i. Slump Limit: 5 inches (125 mm) plus or minus 1 inch (25 mm).

5 Aggregate: Normal weight: ASTM D448 a. Coarse Aggregate : Size No. 57 (1" to No. 4).

2.12 FABRICATING REINFORCEMENT A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116, and furnish batch ticket information. 1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes. PART 3 - EXECUTION

3.1 EMBEDDED ITEMS A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast—in—place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded. 1. Install anchor rods, anchor bolts, seismic holdowns; accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges.

A. Plastic Vapor Retarders: Place, protect, and repair vapor retarders according to ASTM E 1643 and manufacturer's written instructions. 1. Lap joints 6 inches. Install the manufacturer's recommended two-sided pressure—sensitive tape 4" from edge of the bottom sheet. Apply a single sided, 4" wid tape over the top. Use the same double tape method to repair tears and for sealed penetrations. At pipe penetrations, install vapor barrier material boots which overlap the vapor barrier 6" minimum. At the top of the boot install two-sided tape to the pipe and secure the boot with a hose clamp centered on the two-sided tape.

B. Bituminous Vapor Retarders: Place, protect, and repair vapor retarders according to

manufacturer's written instructions. 3.3 STEEL REINFORCEMENT A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement. 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before

placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.

D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces. A. General: Construct joints true to line with faces perpendicular to surface plane of

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of slab on grade. 2. Form keyed joints as required for construction joints. Embed keys at least 1-1/2inches (38 mm) into concrete.

3. Space vertical joints in footings as required. Locate joints beside piers, near corners, and in concealed locations where possible.

4. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces. C. Contraction Joints in Slabs—on—Grade: Form weakened—plane contraction joints, sectioning concrete into areas less than 500 sq. ft. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness.

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch (3.2 mm). Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch- (3.2-mm-) wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side

3.5 CONCRETE PLACEMENT A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Before test sampling and placing concrete, water may be added at Project site, subject 1. Do not add water to concrete after adding high-range water-reducing admixtures to C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that

no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.

2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301. 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary

(150 mm) into preceding layer. Do not insert vibrators into lower layers of concrete that to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate. D. Deposit and consolidate concrete for slabs in a continuous operation, within limits of construction joints, until placement of a section is complete.

1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.

i. Screed slab surfaces with a straightedge and strike off to correct elevations 4. Slope surfaces uniformly to drains where required. 5. Begin initial floating using bull floats or darbies to form a uniform and open—textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
F. Cold—Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or

1. When average high and low temperature is expected to fall below 40 deg F (4.4 deg C) for three successive days, maintain delivered concrete mixture temperature within the ature range required by ACI 301. 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or

chemical accelerators unless otherwise specified and approved in mixture designs G. Hot—Weather Placement: Comply with ACI 301 and as follows: 1. Maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option. 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas

3.6 FINISHING FLOORS AND SLABS
A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and nishing operations for concrete surfaces. Do not wet concrete surfaces. B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and III-floated or darbied. Use stiff brushes, brooms, or rakes to produce a profile amplitude Apply scratch finish to surfaces to receive mortar setting beds for bonded cementitious C. Float Finish: Consolidate surface with power—driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth,

. Apply float finish to surfaces to receive trowel finish. D. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power—driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects hat would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, arpet, ceramic or auarry tile. 2. Finish and measure surface so gap at any point between concrete surface and an

ınleveled, freestanding, 10-foot- (3.05-m-) long straightedge resting on 2 high spots and placed anywhere on the surface does not exceed 1/8 inch (3.2 mm). owel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still astic, slightly scarify surface with a fine broom. Comply with flatness and levelness tolerances for trowel finished floor surfaces. Delete paragraph and subparagraph below if not applicable. Broom finish is generally used

exterior concrete steps and platforms, ramps, and other surfaces subject to light foot traffic. F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated. Immediately after float finishing, slightly roughen trafficked surface by brooming with iber—bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.7 MISCELLANFOUS CONCRETE ITEMS. A. Filling In: Fill in holes and openinas left in concrete structures, unless otherwise ndicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated of required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel—troweling surfaces to a hard, dense finish with corners, intersections, and inations slightly rounded. foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and

3.8 CONCRETE PROTECTING AND CURING A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold—weather protection and ACI 301 for not—weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sg, ft, x h (1 kg/sg, m x h) before and during finishing operations. Apply according to manufacturer's written instructions

after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

D. Cure concrete according to ACI 308.1, by one or a combination of the following methods: Moisture Curing: Keep surfaces continuously moist for not less than seven days with . Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces

and edges with 12-inch (300-mm) lap over adjacent absorptive covers. for curing concrete, placed in widest practicable width, with sides and ends lapped at least 1. inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven Immediately repair any holes or tears during curing period using cover material ar a. Moisture cure or use moisture—retaining covers to cure concrete surfaces to receive b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments. c. Cure concrete surfaces to receive floor coverings with either a moisture—retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period. surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project. Sealing Compound: Apply uniformly to floors and slabs indicated in a

a. After curing period has elapsed, remove curing compound without damaging concrete continuous operation by power spray or roller according to manufacturer's written instructions Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

. Testing and Inspecting: The Contractor will engage a special inspector and qualified testing and inspecting agency to perform field tests, inspections, and Special Inspections and

3. Special Inspections: 1. Steel reinforcement placement. Headed bolts and studs. Verification of use of required design mixture.

Concrete placement, including conveying and depositing. Curing procedures and maintenance of curing temperatur Concrete strength, slump, and temperature.

C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements: Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. (76 c m) or fraction thereof of each concrete mixture placed each day.

a. When frequency of testing will provide fewer than five compressive—strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used. 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite ample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method, for normal—weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.

5. Compression Test Specimens: ASTM C 31/C 31M. a. Cast and laboratory cure two sets of six standard cylinder specimens for each omposite sample. 6. Compressive—Strength Tests: ASTM C 39/C 39M; test one set of two laboratory—cured specimens at 7 days and one set of two specimens at 28 days. Retaing the remaining two ts for testing at 56 days if required

a. A compressive—strength test shall be the average compressive strength from a set of o specimens obtained from same composite sample and tested at age indicated.

7. Strength of each concrete mixture will be satisfactory if every average of any three nsecutive compressive—strength tests equals or exceeds specified compressive strength and

no compressive—strenath test value falls below specified compressive strenath by more than

3. Test results shall be reported in writing to Owner, Architect, Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, na of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of oncrete.
10. Additional Tests: Testing and inspecting agency shall make additional tests of concrete

when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency ay conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect. 1. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

12. Correct deficiencies in the Work that test reports and inspections indicate dos not comply with the Contract Documents.

SECTION 04001 - MASONRY WORK

PART 1 - GENERAL

A. Work Included: Provide all masonry, grout, mortar, related reinforcing, and installation as shown on the drawings and described here-in.

PART 2 - PRODUCTS

A. Acceptable manufacturers / Product: 1. Acme Brick Co., (817) 332-4101. Color: Ref. Exterior Finish Schedule

The Denver Brick Co., (303) 688-6952, Color: Ref. Exterior Finish Schedule . Belden Brick Co., (330) 456-0031, Color: Ref. Exterior Finish Schedule . Face Brick: Provide brick as follows: 1. Type: Meet ASTM standards, Grade MW above grade, Grade SW when brick is in contact

2. Size: King Size  $(9-5/8" \times 2-3/4" \times 3-5/8")$ 2.2 CONCRETE MASONRY UNITS

Acceptable manufacturers: Featherlite Corporation, (512) 255-2573. Equal manufacturers when approved in advance.

Concrete Masonry Units (CMU): Provide as follows: Split-face veneer and smooth face concrete masonry units (cmu), load bearing 8x8x16 and/or non-load bearing veneer blocks, 4" nominal thickness, with 8"x16" face dimensions, to comply with ASTM C-90, Grade N, Type I, fabricated using ASTM C-331 lightweight aggregate. Color: Ref. Exterior Finish schedule 3. Units shall have a minimum compressive strength (fm') of 2000 psi at 28 days.

4. Masonry and mortar shall have an integral waterproofing agent as determined by the

A. Portland Cement: Comply with ASTM C150, Type I or II, low alkali. "Masonry" cement will not be acceptable.

Aggregate:
Sand for Mortar: Comply with ASTM C144. . Aggregate for Grout: Comply with ASTM C404.

Hydrated Lime: Comply with ASTM C207, Type "S.B."
 Coloring Pigment: Provide pure ground mineral oxides, non-fading and alkali proof.

Water: Provide potable water free from injurious amounts of acids, alkalis, oil, organic matter. 1. Bars: Comply with ASTM A615, grade 40, unless otherwise shown on the Drawings, using 2. Bending: Comply with ACI 318.

procement having any of the following defects a. Bar lengths, depths, or bends exceeding the specified tolerances;
 b. Bends or kinks not indicated on the Drawings or required for the Work; c. Bars with cross—section reduced due to excessive rust or other causes. . Masonry Ties: Adjustable loop type, at wall studs; galvanized steel construction of 3/16"

wire, ASTM A-82. (Corrugated formed sheet style metal ties are expressly prohibited). Install at each wall stud and 16"o.c. vertically (6 courses at brick), max. wall area per anchor 2.67 sa. ft. Provide one of the following: a. DA 803, by Dur-o-wall, (630) 851-8400. b. No. 316 & 315D, by Heckmann Building Products, (800) 621-4140. c. No. 1100-2803-2102, by Masonry Reinforcing of America, (800) 849-6722.

Preformed Control Joints: Neoprene Material - Provide with corner and tee accessor

Closed cell polyurethane; oversized 50 percent to joint width; self expanding; width ¼ inch less than masonry thickness by maximum lengths.

I. Flashing: At wall bottoms and shelf angles. Provide one of the following: . Fiberweb 200, Dur-o-wall, (630) 851-8400. 2. No. 80, by Heckmann Building Products, (800) 621-4140. No. 4100, by Masonry Reinforcing of America, (800) 849-6722. Weeps: Preformed clear plastic tubes, 3/8" O.D. x 3-1/2", hollow; 20"o.c. at wall toms (16"o.c. at cmu) and shelf angles. Provide one of the following: . DA-1005, by Dur-O-Wall, (630) 851-8400.

2. No. 330, by Heckmann Building Products, (800) 621-4140.

3. No. 3600, by Masonry Reinforcing of America, (800) 849-6722. 2.4 MORTAR AND GROUT MIXES . Unless otherwise directed or by governmental agencies having jurisdiction, provide type "N" mortar consisting of:

b. One-half part Lime; to Six parts sand measured damp and loose.

 Measure the ingredients accurately.
 Mix in a mechanically operate mortar mixer for at least three minutes after all ingredients are in the drum, and at least long enough to make a thorough, complete intimate 4. Re—temper mortar with water as required to maintain high plasticity. a. On mortar boards, re—temper only by adding water within the basin formed with mortar, and by working the mortar into the water. b. Discard and do not use mortar which is unused after 1½ hours following the initial

1. Where compressive strengths exceeding 2000 psi are called for on the Drawings or required by governmental agencies having jurisdiction, provide a laboratory designed mix to the

. Use only such admixture as are specifically approved in advance and by governmental agencies having jurisdiction PART 3 - EXECUTION

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

 Do not commence installation until foundations are clean, rough, and level.
 Sandblast the foundation topes, if necessary, and remove all laitance and foreign 3. Verify that the foundation elevation is such that the bed joint thickness will be betweer 14" and 34", and that the foundation edge is true to line with masonry not projecting over 4. Clean projecting dowels free from loose scale, dirt, concrete, and other material that will

3.2 INSTALLATION . Wetting of masonry units:

5. Verify that dowels are in proper location.

3.1 SURFACE CONDITIONS

. When being laid, provide brick suction sufficient to hold the mortar and to absorb water from the mortar and grout. 2. Provide masonry units sufficiently damp so that mortar will remain plastic enough to permit the masonry unit to be leveled and plumbed immediately after being laid without destroying the bond. Loying: I. Unless otherwise indicated on the Drawings, make the masonry work plumb, level, and

true to line, with square angles and corner.

2. Use line blocks whenever possible. When it is absolutely necessary to use a line pin, fill the hole immediately after the pin is withdrawn.

3. Use only masonry units that are clean and free from dust and other foreign matter. . Lay in running bond unless otherwise shown on the Drawings. 5. Do not use bonding headers on grouted masonry unless specifically so directed. a. Bevel all bed joints, sloping toward the center of the wall in such a manner that the

joints will be filled when the masonry units are finally brought to line. b. Do not furrow the bed joints. . Avoid fins of bed joints protruding into grout space. (1) If they occur, leave in place if not projecting more than the bed joint thickness. 2) Do not, in any case, cut off and drop into the grout space. 7. Head joints: Regardless of thickness, completely fill with mortar or grout. 8. Where masonry units are moved or shifted, remove and lay again in fresh mortar.

0. At the finishing course, bring the last grout pour flush with the top of the masonry . Whenever possible, grout from the inside face of the masonry. b. Take extreme care to prevent grout or mortar staining the face of masonry to be left

c. Protect sills, ledges, offsets, door jambs, corners, and similar points from damage and 12. Immediately remove mortar and grout from areas where they are not scheduled to be 13. Do not permit mortar to drop or accumulate into cavity air space or to plug weep

A. General: Cut out and repoint defective joints.
 On all joints exposed to the weather, tool and make smooth, solid, and watertight. 1 All joints: Provide "concave tooled" joints

3.5 POINTING AND CLEANING A. At the completion of this portion of the Work, visually inspect the work of this Section and point, or cut out and repoint if necessary, all holes and defective joints.

B. Thoroughly clean all masonry surfaces to be left exposed in the finished Work, removing all traces of mortar, grout, and foreign matter. In the event ordinary cleaning is not adequate, provide light sandblasting when so directed, and at no additional cost to the Owner.

SECTION 04700 - MANUFACTURED MASONRY

A. Section Includes: Lone Star Stone, P.O. Box 2125 Whitney, TX 76692, 888-377-8663

1.2 REFERENCES A. American Concrete Institute (ACI). American Society for Testing and Materials (ASTM):

1. ASTM C 39, Standard Test Method for Compressive Strength of Cylindrical Concrete ASTM C 67, Standard Test Methods for Sampling and Testing Brick and Structural

ASTM C 177, Standard Test Method for Steady—State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded—Hot—Plate Apparatus.

ASTM C 192, Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory.

ASTM C 270, Standard Specification for Mortar for Unit Masonry.

ASTM C 482, Standard Test Method for Bond Strength of Ceramic Tile to Portland ASTM D 226, Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.

1.3 SUBMITTALS Product Data: Manufactured masonry and application materials including mortar color

charts, and weather resistant barrier. Samples: Panel containing full-size samples of specified manufactured masonry showing full range of colors and textures complete with specified mortar. Actual size of masonry sample approximately 12 by 12 inches (300 by 300 mm).

1.4 QUALITY ASSURANCE

Manufacturer Qualifications: Minimum five years experience in producing manufactured masonry. Installer Qualifications: Company with documented experience in installation of manufactured masonry including minimum 5 projects within 400 mile radius of this

1.5 DELIVERY. STORAGE AND HANDLING Follow manufacturer's instructions.

Store moisture-sensitive materials in weather protected enclosures 1.6 PROJECT / SITE CONDITIONS A. Environmental Requirements: Maintain materials and ambient temperature in area of installation at minimum 40 degrees F (4 degrees C) prior to, during, and for 48 hours

PART 2 - PRODUCTS 2.1 MANUFACTURER

A. Acceptable manufacturers / Product: As indicated on construction drawings for type and b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished

PART 3 - EXECUTION 3.1 EXAMINATION

Examine substrates upon which manufactured masonry will be installed. Coordinate with responsible entity to correct unsatisfactory conditions. encement of work by installer is acceptance of substrate conditions.

Protection: Prevent work from occurring on the opposite of walls to which manufactured masonry is applied during and for 48 hours following installation of the manufactured B. Surface Preparation: Follow manufacturer's instructions designated below for the appropriate type of manufactured masonry and substrate

A. Clean manufactured masonry in accordance with manufacturer's installation instructions.

3.3 INSTALLATION A. Install product in accordance with manufactuter's instructions. 3.4 CLEANING

Protect finished work from rain during and for 48 hours following installation Protect finished work from damage during remainder of construction period.

SECTION 05120 - STRUCTURAL STEEL

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

A. This Section includes the following: . Structural steel. Architecturally exposed structural steel.

Related Sections include the following 1. Division 1 Section "Quality Requirements" for independent testing agency procedures and 2. Division 5 Section "Steel Deck" for field installation of shear connectors. 3. Division 5 Section "Metal Fabrications" for steel lintels not attached to structural-steel rame and other metal items not defined as structural steel. 4. Division 9 Painting Sections and Division 9 Section "High-Performance Coatings" for surface preparation and primina requirements.

5. Division 5 Section "Metal Canopies" for canopy decking and fascionary A. Structural Steel: Elements of structural-steel frame, as classified by AISC's "Code of Standard Practice for Steel Buildings and Bridges," that support design loads.
B. Architecturally Exposed Structural Steel: Structural steel designated as architecturally

1.4 QUALITY ASSURANCE A. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC—Certified Erector, Category CSE.

B. Fabricator Qualifications: A qualified fabricator who participates in the AISC Quality Certification Program and is designated an AISC—Certified Plant, Category SBD C. Welding: Qualify procedures and personnel according to AWS D1.1. "Structural Welding

Code——Steel. D. Comply with applicable provisions of the following specifications and documents: AISC's "Code of Standard Practice for Steel Buildings and Bridges."
 AISC's "Seismic Provisions for Structural Steel Buildings" and "Supplement No. 2." 3. AISC's "Specification for Structural Steel Buildings;Allowable Stress Design and Plastic 4. AISC's "Specification for the Design of Steel Hollow Structural Sections."

1.5 DELIVERY, STORAGE, AND HANDLING A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from erosion and deterioration. Store fasteners in a protected place. Clean and relubricate bolts and nuts that become dry or rusty before use. 2. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials of

A. Furnish anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and

2.1 STRUCTURAL-STEEL MATERIALS

. Angle Shapes: ASTM A 36/A 36M B. Plate and Bar: ASTM A 36/A 36M C. Cold—Formed Hollow Structural Sections: ASTM A 500, Grade B structural tubing. D. Welding Electrodes: Comply with AWS requirements. 2.2 BOLTS, CONNECTORS, AND ANCHORS

A. Unheaded Anchor Rods: ASTM A 36/A 36M . Configuration: Straight. 2. Nuts: ASTM A 563 (ASTM A 563M) hex head carbon steel. Plate Washers: ASTM A 36/A 36M carbon steel.

a. Hot-dip zinc coating, ASTM A 153/A 153M, Class C at locations where in contact with pressure treated wood. o. Plain, at all other locations B. Threaded Rods: ASTM A 36/A 36M 1. Nuts: ASTM A 563 (ASTM A 563M) hex carbon stee

. Washers: ASTM A 36/A 36M carbon steel. a. Hot-dip zinc coating, ASTM A 153/A 153M, Class C at locations where in contact with b. Plain, at all other locations

A. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404, Size No. 2. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

B. Nonmetallic, Shrinkage—Resistant Grout: ASTM C 1107, factory—packaged, nonmetallic agaregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC's Specification for Structural Steel Buildings——Allowable Stress Design and Plastic Design. Mark and match—mark materials for field assembly. Architecturally Exposed Structural Steel: Comply with fabrication requirements, including tolerance limits, of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for tructural steel identified as architecturally exposed structural steel. 1. Fabricate with exposed surfaces smooth, square, and free of surface blemishes including pitting, rust, scale and roughness. Remove blemishes by filling or grinding or by welding and grinding, before cleaning, treating, and shop priming.

C. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.

D. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces. Finishing: Accurately finish ends of columns and other members transmitting bearing F. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to

SSPC-SP 1, "Solvent Cleaning."
G. Holes: Provide holes required for securing other work to structural steel and for passage 1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.

2. Base-Plate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to 2.5 SHOP CONNECTIONS A. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances. appearance, and quality of welds and for methods used in correcting welding work.

 Remove backing bars or runoff tabs, back gouge, and grind steel smooth.
 Assemble and weld built—up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material. . Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances.

 a. Grind butt welds flush.
 b. Grind or fill exposed fillet welds to smooth profile. Dress exposed welds. PART 3 - EXECUTION

A. Verify elevations of concrete bearing surfaces and locations of anchor rods, bearing plates, and other embedments, with steel erector present, for compliance with requirements. B. Proceed with installation only after unsatisfactory conditions have been corrected. A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place, unless otherwise indicated.

A. Set structural steel accurately in locations and to elevations indicated and according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Structural Steel Buildings——Allowable Stress Design and Plastic Design." B. Base Plates: Clean concrete—bearing surfaces of bond—reducing materials, and roughen surfaces prior to setting base plates. Clean bottom surface of base plates. Set base plates for structural members on setting nuts as require

Weld plate washers to top of base plate. Snug-tighten anchor rods after supported members have been positioned and plumbed. Promptly pack grout solidly between bearing surfaces and base plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply wit manufacturer's written installation instructions for shrinkaae—resistant arouts. Maintain erection tolerances of structural steel and architecturally exposed structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges. D. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
1. Level and plumb individual members of structure.

2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service. Splice members only where indicated. Remove erection bolts on welded, architecturally exposed structural steel; fill holes with olug welds; and grind smooth at exposed surfaces G. Do not use thermal cutting during erection

I. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged. 3.4 FIELD CONNECTIONS A. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances. appearance, and quality of welds and for methods used in correcting welding work. Comply with AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "Specification for Structural Steel Buildings——Allowable Stress Design and Plastic Design" for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces

2. Remove backing bars or runoff tabs, back gouge, and grind steel smooth. 3. Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances. a. Grind butt welds flush.b. Grind or fill exposed fillet welds to smooth profile. Dress exposed welds.

3.5 FIELD QUALITY CONTROL A. Testing Agency: Contractor will engage a qualified independent testing and inspecting agency to inspect field welds.

B. Welded Connections: Field welds will be visually inspected according to AWS D1.1. 1. In addition to visual inspection, field welds will be tested according to AWS D1. following inspection procedures, at testing agency's option: a. Liquid Penetrant Inspection: ASTM E 165.

Cracks or zones of incomplete fusion or penetration will not be accepted. Ultrasonic Inspection: ASTM E 164. d. Radiographic Inspection: ASTM E 94.
C. Correct deficiencies in Work that test reports and inspections indicate does not comply

3.6 REPAIRS AND PROTECTION A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Touchup Painting: Cleaning and touchup painting are specified in Division 9 painting

SECTION 05310 - STEEL DECK PART 1 - GENERAL

1.2 SUMMARY
A. This Section includes the following:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Related Sections include the following: 1. Division 9 Section "Painting" for repair painting of painted deck. 2. Division 9 Section "Special Coatings" for repair of deck special coatings. A. Installer Qualifications: An experienced installer who has completed steel deck similar in

material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in—service performance.

B. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548. C. AISI Specifications: Calculate structural characteristics of steel deck according to AISI's Specification for the Design of Cold-Formed Steel Structural Members. 1.4 DELIVERY STORAGE AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a

PART 2 - PRODUCTS 2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following a. Nucor Corp.: Vulcraft Di

c. Wheeling Corrugating Co.; Div. of Wheeling-Pittsburgh Steel Corp.

A. Steel Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 29, and the . Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33 (230), zinc coating.
2. Deck Profile: Type WR, wide rib

3. Profile Depth: 1-1/2 inches (38 mm). 4. Design Uncoated-Steel Thickness: 0.0295 inch (0.75 mm). 6. Side Laps: Overlapped or interlocking seam at Contractor's option. 2.3 ACCESSORIES

A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated. B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 12-14 minimum diameter. D. Flexible Closure Strips: Vulcanized, closed—cell, synthetic rubber.

E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength o 33,000 psi (230 MPa), not less than 0.0359-inch (0.91-mm) design uncoated thickness, of same material and finish as deck: of profile indicated or required for application F. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, 0.0747 inch (1.90 mm) thick, with factory-punched hole of 3/8-inch (9.5-mm) minimum diameter.
G. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035, with dry film containing a

SECTION 05400 - COLD-FORMED METAL FRAMING

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section

This Section includes the following Exterior load-bearing wall framing.

Roof joist framing. B. Related Sections include the following: Division 5 Section "Metal Fabrications" for masonry shelf angles and connections. 2. Division 6 Section "Rough Carpentry" for, wall sheathing, or roof sheathing using 3. Division 9 Section "Gypsum Board Assemblies" for interior non-load-bearing metal-stud framing and ceiling—suspension assemblies

A. Minimum Uncoated Steel Thickness: Minimum uncoated thickness of cold-formed framing delivered to the Project site shall be not less than 95 percent of the thickness used in the old-formed framing design. Lesser thicknesses shall be permitted at bends due to cold orming. B. Producer: Entity that produces steel sheet coil fabricated into cold—formed members. 1.4 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed cold-formed metaframing similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a 10-year record of successful in-service performance B. Mill certificates signed by steel sheet producer or test reports from a gualified independent testing agency indicating steel sheet complies with requirements, including uncoated steel thickness, yield strength, tensile strength, total elongation, chemical requirements, and galvanized—coating thickness.

C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548. D. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code-Steel," and AWS D1.3, "Structural Welding Code-Sheet Steel E. Fire—Test—Response Characteristics: Where metal framing is part of a fire—resistance—rated assembly, provide framing identical to that of assemblies tested for fire

esistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities Fire-Resistance Ratings: Indicated by GA File Numbers in GA-600, "Fire Resistance Design Manual," or by design designations from UL's "Fire Resistance Directory" or from the listings of another testing and inspecting agency.

F. AISI Specifications: Comply with AISI's "Specification for the Design of Cold-Formed Steel Structural Members" and the following for calculating structural characteristics of cold-formed

1. CCFSS Technical Bulletin: "AISI Specification Provisions for Screw Connections 1.5 DELIVERY, STORAGE, AND HANDLING A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Store cold—formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2 - PRODUCTS 2.1 MANUFACTURERS A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering cold—formed metal framing that may be incorporated into the Work include, but are not limited to, the following:
1. Clark Steel Framing Industries

Dietrich Industries, Inc., (412) 281-2805 3. United Metal Products, Inc. MarinoWare; Div. of Ware Industries, Inc.

A. Steel Sheet: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as 1. Grade: Refer to Structural Drawings for structural elements and Architectural Drawings 2. Grade: Refer to Structural Drawings for structural elements and Architectural Drawings for architectural elements. 3. Coating: G90 (Z275).

pretreated, and primed with manufacturer's baked—on, lead— and chromate—free, rust—inhibitive primer complying with performance requirements in FS TT—P—664, of grade as follows:

1. Grade: Refer to Structural Drawings for structural element and Architectural Drawings 2.3 LOAD-BEARING WALL FRAMING A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated.

B. Steel Sheet: ASTM A 570/A 570M, hot rolled or ASTM A 611, cold rolled cleaned

punched, with stiffened flanges, complying with ASTM C 955, and as follows:

1. Minimum Uncoated—Steel Thickness: As indicated on the Structural Drawings. 2. Flange Width: 2-1/2 inches (63 mm). 3. Section Properties: As indicated on the Structural Drawings. 3. Steel Track: Manufacturer's standard U—shaped steel track, of web depths as indicated on the Structural Drawinas, unpunched, with straight flanges, complying with ASTM C 955, and Minimum Uncoated—Steel Thickness: As indicated on the Structural Drawings.

Flange Width: As indicated on the Structural Drawings.

2.4 NON-LOAD-BEARING CURTAIN-WALL FRAMING 1. Cold-rolled metal framing shall comply with ASTM A-570, Grade 33 (33,000 psi yield), Grade 50 (50,000 psi yield). 2. Provide standard punched steel studs, with properties (type, size, gauge, spacing on center, etc.) as shown on the drawings.
3. Use only one type throughout the work, unless otherwise shown on the drawings or specifically approved non-load bearing.

4. At metal stud walls, unless otherwise shown on the drawings, provide 16 gauge standard steel "C" studs, hot—dip galvanized.
5. Major framing members of the exterior wall shall be equal to CSJ style studs and CSE style joists.
B. Accessories: Provide all accessories including, but not necessarily limited to, tracks, clips,

anchors, fastening devices, slip clips, sound attenuation pencil rods and resilient clips, and other accessories required for a complete and proper installation, and as recommended by

C. Horizontal Bridging: 1 1/2" cold rolled galvanized steel furring channels. 2.5 ROOF JOIST FRAMING A. Steel Roof Joists: Manufacturer's standard C-shaped steel sections, of web depths ndicated, unpunched, with stiffened flanges, complying with ASTM C 955, and as follows

1. Minimum Uncoated—Steel Thickness: As indicated on the Structural Drawings. 2. Flange Width: As indicated on the Structural Drawings.
3. Section Properties: As indicated on the Structural Drawings.

2.6 FRAMING ACCESSORIES A. Fabricate steel—framing accessories of the same material and finish used for framing members, with a minimum yield strength of 33,000 psi (230 MPa). B. Provide accessories of manufacturer's standard thickness and configuration, unless therwise indicated, as follows: Supplementary framing. Bracing, bridging, and solid blocking.

4. End clips. 5. Foundation clips. . Gusset plates.
. Stud kickers, knee braces, and girts. Joist hangers and end closures. 9. Hole reinforcing plates. 10. Backer plates.

ne manufacturer of the steel studs used.

2.7 ANCHORS, CLIPS, AND FASTENERS Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according B. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon—steel hex—headed bolts and carbon—steel nuts; and flat, hardened—steel washers

C. Expansion Anchors: Fabricated from corrosion—resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.

D. Power—Actuated Anchors: Fastener system of type suitable for application indicated,

fabricated from corrosion—resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency. E. Mechanical Fasteners: Corrosion—resistant—coated, self—drilling, self—threading steel drill Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere. Welding Electrodes: Comply with AWS standards.

MISCELLANEOUS MATERIALS Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035.
Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water

required for placement and hydration. C. Thermal Insulation: ASTM C 665, Type I, unfaced mineral—fiber blankets produced by combining glass or slag fibers with thermosetting resins. 2.9 GYPSUM SHEATHING Type and Thickness: Regular, 1/2 inch (12.7 mm) thick. Type and Thickness: Type X, 5/8 inch (15.9 mm) thick. Edge and End Configuration: Square ends.

Size: 48 by 96 inches (1220 by 2438 mm). Manufacturers: Subject to compliance with requirements, provide products by one of the Georgia-Pacific Corp., (800) 284-5347. National Gypsum Co.: Gold Bond Building Products Division. (800) 628-4662

USG Corp.; United States Gypsum Co. (888) 834-2371

A. Fasteners: Steel drill screws, ASTM C 954, in length recommended by sheathing manufacturer for thickness of sheathing board to be attached, with organic-polymer or other corrosion—protective coating having a salt—spray resistance of more than 800 hours accordin Elastomeric Sealant: Medium-modulus, neutral-curing silicone sealant compatible with joint substrates formed by gypsum sheathing and other materials, recommended by sheathing manufacturers for application indicated, and complying with requirements for elastomeric sealants specified in Division 7 Section "Joint Sealants." Glass-Fiber Sheathing Tape for Glass-Mat Gypsum Sheathing: Self-adhering glass-fibe upe, minimum 2 inches (50 mm) wide, 10 by 10 or 10 by 20 threads per inch (390 by 390 or 390 by 780 threads per meter), of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing board and with a history of successful in-service use.

ncorporated into the Work include, but are not limited to, the following

Available Products: Subject to compliance with requirements, products that may be

Products: Subject to compliance with requirements, provide one of the following: Perma-Tite Tape--PGM 207A; PermaGlas-Mesh, Inc.

Quik-Tape; Quik-Tape, Inc. Fabricate cold-formed metal framing and accessories plumb, square, and true to line. 1012 SOUTH COOPER STREE and with connections securely fastened, according to manufacturer's written recommendations

Fabricate framing assemblies using jigs or templates. Cut framing members by sawing or shearing; do not torch cut. Fasten cold—formed metal framing members by welding or screw fastening, as standard fabricator. Wire tying of framing members is not permitted. 2. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality b. Locate mechanical fasteners and install according to Structural Drawings, with screw Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a naximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows: Spacing: Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

2. Squareness: Fabricate each cold—formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch (3 mm).

Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

Grout bearing surfaces uniform and level to ensure full contact of bearing flanges or track webs on supporting concrete or masonry construction 3.3 INSTALLATION, GENERAL Cold-formed metal framing may be shop or field fabricated for installation, or it may be

PART 3 - EXECUTION

track or tension members.

B. Install cold-formed metal framing according to ASTM C 1007, unless more stringent requirements are indicated. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to manufacturer's written recommendations and Cut framing members by sawing or shearing; do not torch cut. Fasten cold—formed metal framing members by welding or screw fastening, as standard with fabricator. Wire tying of framing members is not permitted. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads. Install framing members in one-piece lengths, unless splice connections are indicated for

Install temporary bracing and supports to secure framing and support loads comparable n intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured. Install insulation in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.

H. Erection Tolerances: Install cold—formed metal framing level, plumb, and true to line to maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:

plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials. 3 4 LOAD-REARING WALL INSTALLATION Install continuous top and bottom tracks sized to match studs. Align tracks accurately nd securely anchor at corners and ends, and at spacings as follows: . Anchor Spacing: As shown on the Sturctural Drawings. B. Squarely seat studs against webs of top and bottom tracks. Fasten both flanges of studs to top and bottom tracks. Space studs as follows:

Space individual framing members no more than plus or minus 1/8 inch (3 mm) from

Stud Spacing: 16 inches (406 mm).
Set studs plumb. Install headers over wall openings wider than stud spacing. Locate headers above openings as indicated. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip—angle connectors, web stiffeners, or Frame wall openings with not less than a double stud at each jamb of frame as indicated on Structural Drawings.
2. Install runner tracks and jack studs above and below wall openings. Anchor tracks to amb studs with clip angles or by welding, and space jack studs same as full—height wall Install supplementary framing, blocking, and bracing in stud framing indicated to support attachment to framing.

1. If type of supplementary support is not indicated, comply with stud manufacturer's written tions and industry standards in each case, considering weight or load resulting recommenaations and i from item supported. Install horizontal bridging in stud system, spaced 48 inches (1219 mm) apart. Fasten at each stud intersection. Bridging: Cold—rolled steel channel, welded or mechanically fastened to webs of punche studs with a minimum of two screws into each flange of the clip angle.

2. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated

stud flanges and secure solid blocking to stud webs or flanges. 3.5 NON-LOAD-BEARING CURTAIN-WALL INSTALLATION A. Install continuous tracks sized to match studs. Align tracks accurately and securely anchor to supporting structure as indicated. Fasten both flanges of studs to [top and] bottom track, unless otherwise indicated Stud Spacing: As indicated.

Set studs plumb, except as needed for diagonal bracing or required for non-plumb walls

and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to

r warped surfaces and similar requirements. Isolate non-load-bearing steel framing from building structure to prevent transfer of vertical loads while providina lateral support Install single deep—leg deflection tracks and anchor to building structure.

Install double deep—leg deflection tracks and anchor outer track to building structure. Connect vertical deflection clips to [bypassing] [infill] studs and anchor to primary building structure. Install horizontal bridging in curtain—wall studs, spaced in rows indicated on Shop Drawings but not more than 54 inches (1370 mm) apart. Fasten at each stud intersection.

1. Top Bridging for Single Deflection Track: Install row of horizontal bridging within 12

inches (300 mm) of single deflection track. Install a combination of flat, taut, steel sheet straps of width and thickness indicated and stud or stud—track solid blocking of width and thickness matching studs. Fasten flat straps to stud flanges and secure solid blocking to Install solid blocking at [every other stud] [centers indicated]. Bridging: Cold-rolled steel channel, welded or mechanically fastened to webs of punched Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.hing o F. Install miscellaneous framing and connections, including stud kickers, web stiffeners, clip angles, continuous angles, anchors, fasteners, and stud girts, to provide a complete and stable curtain—wall—framing system.

3.6 ROOF JOIST INSTALLATION A. Install perimeter joist track sized to match joists. Align and securely anchor or fasten track to supporting structure at corners, ends, and spacings indicated on Structural Drawings B. Install joists bearing on supporting frame, level, straight, and plumb; adjust to final position, brace, and reinforce. Fasten joists to both flanges of joist track.

1. Reinforce ends and bearing points of joists with web stiffeners, end clips, joist hangers, steel clip angles, or steel—stud sections as indicated on the Structural Drawings and/or on the Shop Drawings. Space joists not more than 2 inches (51 mm) from abutting walls, and as follows: Joist Spacing: As indicated on the Structural Drawings.
Frame openings with built—up joist headers consisting of joist and joist track, nesting joists, or another combination of connected joists if indicated. E. Install miscellaneous joist framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold—down angles, anchors, and fasteners, to provide a complete and stable joist—framing assembly.

15 Ninth Avenue North, Honkins, MN 55343. Phone: 952.941.8660/ www.wilkusarch.com

CLIENT:

America's Drive-Inc

**GEAUX SONIC LLC** 

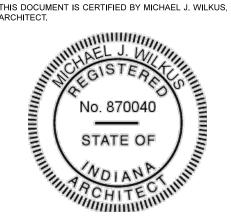
GREENTOWN, IN 46901

PROJECT INFORMATION:

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SIGNATURE MICHAEL J. WILKUS ARCHITECT

LICENSE NUMBER: AR00870040

EXPIRATION DATE: 12-31-16 03-18-16 DATE

PROJECT NO : 2015-1674

DRAWN BY: J.A.K. CHECKED BY: M.J.W. DATE: PERMIT SET 03-18-16

DATE:

PROJECT LOCATION: KOKOMO, IN

SHEET NUMBER / TITLE:

SPECIFICATIONS