

DIVISION 31 – SITE UTILITIES

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SECTION 31 1000 - SITE CLEARING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Clearing equipment slab area of existing lawn sod.
- B. Removal of existing debris.

PART 2 PRODUCTS -- NOT USED

2.01 MATERIALS

PART 3 EXECUTION

3.01 SITE CLEARING

- A. Minimize production of dust due to clearing operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

3.02 VEGETATION

- A. Do not remove or damage vegetation beyond the following limits:
 - 1. 2 feet outside the equipment slab perimeter.
- B. Vegetation Removed: Do not burn, bury, landfill, or leave on site, except as indicated.
 - 1. Chip, grind, crush, or shred vegetation for mulching, composting, or other purposes; preference should be given to on-site uses.
 - 2. Sod: Re-use removed sod on site if possible; otherwise sell if marketable, and if not, treat as specified for other vegetation removed.
- C. Restoration: If vegetation outside removal limits is damaged or destroyed due to subsequent construction operations, replace at no cost to Owner.

3.03 DEBRIS

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 31 1000

SECTION 31 2316 – EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavating for slabs-on-grade.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Locate, identify, and protect utilities that remain and protect from damage.

3.02 EXCAVATING

- A. Excavate to accommodate the new equipment pad size and depth as directed on the Construction Documents.
- B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- C. Hand trim excavations. Remove loose matter.
- D. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- E. Remove excavated material that is unsuitable for re-use from site.
- F. Remove excess excavated material from site.

END OF SECTION 31 2316

SECTION 31 2323 – FILL**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Filling, backfilling, and compacting for building volume below grade.
- B. Backfilling and compacting for utilities outside the building to utility main connections.

1.02 RELATED REQUIREMENTS

- A. Section 31 2316 - Excavation: Removal and handling of soil to be re-used.

1.03 DEFINITIONS

- A. Finish Grade Elevations: Match Existing.

1.04 REFERENCE STANDARDS

- A. AASHTO T 180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18 in.) Drop; 2015.
- B. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)); 2012.
- C. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN m/m³)); 2012.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. When necessary, store materials on site in advance of need.

PART 2 PRODUCTS**2.01 FILL MATERIALS**

- A. General Fill: Subsoil excavated on-site.
 - 1. Graded.
 - 2. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.
- B. Concrete for Fill: As specified in Section 03 3000; compressive strength of 2500 psi.

2.02 SOURCE QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for testing and analysis of soil material.
- B. If tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Identify required lines, levels, contours, and datum locations.

3.02 PREPARATION

- A. Scarify subgrade surface to a depth of 6 inches to identify soft spots.
- B. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- C. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- D. Until ready to fill, maintain excavations and prevent loose soil from falling into excavation.

3.03 FILLING

- A. Fill to contours and elevations indicated using unfrozen materials.
- B. Employ a placement method that does not disturb or damage other work.
- C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- F. Correct areas that are over-excavated.
 - 1. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.
- G. Compaction Density Unless Otherwise Specified or Indicated:
 - 1. Under paving, slabs-on-grade, and similar construction: 95 percent of maximum dry density.
 - 2. At other locations: 95 percent of maximum dry density.

3.04 FILL AT SPECIFIC LOCATIONS

- A. Use general fill unless otherwise specified or indicated.
- B. Under Interior Slabs-On-Grade:
 - 1. Use granular fill.
 - 2. Depth: 4 inches deep.
 - 3. Compact to 95 percent of maximum dry density.
- C. At Foundation Walls and Footings:
 - 1. Use general fill.
 - 2. Fill up to subgrade elevation.
 - 3. Compact each lift to 95 percent of maximum dry density.
 - 4. Do not backfill against unsupported foundation walls.
- D. Over Buried Utility Piping and Conduits in Trenches:
 - 1. Bedding: Use granular fill.
 - 2. Cover with general fill.
 - 3. Fill up to subgrade elevation.
 - 4. Compact in maximum 8 inch lifts to 95 percent of maximum dry density.

3.05 TOLERANCES

- A. Top Surface of General Filling: Plus or minus 1 inch from required elevations.

3.06 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection and testing.

- B. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D698 ("standard Proctor"), ASTM D1557 ("modified Proctor"), or AASHTO T 180.
- C. If tests indicate work does not meet specified requirements, remove work, replace and retest.

END OF SECTION 31 2323

END OF DIVISION 31

SECTION 32 1123 - AGGREGATE BASE COURSES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Aggregate base course.

1.02 RELATED REQUIREMENTS

- A. Section 32 1313 - Concrete Paving: Finish concrete surface course.

1.03 REFERENCE STANDARDS

- A. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates; 2014.
- B. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System); 2011.

PART 2 PRODUCTS**2.01 MATERIALS**

- A. Blended Aggregate: Angular crushed (non frost susceptible) stone; free of shale, clay, friable material and debris.
 - 1. Graded in accordance with ASTM D2487 Group Symbol GW.
 - 2. Graded in accordance with ASTM C136/C136M, within the following limits:
 - a. 1 inch sieve: 100 percent passing.
 - b. 3/4 inch sieve: 90 to 100 percent passing.
 - c. No. 4 sieve: 40 to 60 percent passing.
 - d. No. 8 sieve: 30 to 50 percent passing.
 - e. No. 40: 12 to 25 percent passing.
 - f. No. 200: 5 percent maximum passing.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that survey bench marks and intended elevations for the work are as indicated.

3.02 INSTALLATION

- A. Spread aggregate over prepared substrate to a total compacted thickness of 4 inches.
- B. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.
- C. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- D. Use mechanical tamping equipment in areas inaccessible to compaction equipment. Compact to 95% maximum density.

END OF SECTION 32 1123

SECTION 32 1313 - CONCRETE PAVING**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Concrete equipment pads.

1.02 REFERENCE STANDARDS

- A. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; 1991 (Reapproved 2009).
- B. ACI 301 - Specifications for Structural Concrete; 2016.
- C. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).
- D. ACI 305R - Guide to Hot Weather Concreting; 2010.
- E. ACI 306R - Cold Weather Concreting; 2010.
- F. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
- G. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2016b.
- H. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2016a.
- I. ASTM C150/C150M - Standard Specification for Portland Cement; 2016.
- J. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2016.
- K. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).
- L. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2014.
- M. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2004 (Reapproved 2013).

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on joint filler, admixtures, curing compound, and mix design.

PART 2 PRODUCTS**2.01 PAVING ASSEMBLIES**

- A. Comply with applicable requirements of ACI 301.
- B. Concrete Equipment Pads: 4,000 psi 28 day concrete, 6 inches thick, natural color Portland cement, light broom finish.

2.02 FORM MATERIALS

- A. Wood or metal form material, profiled to suit conditions.
- B. Joint Filler: Preformed; non-extruding bituminous type (ASTM D1751) or sponge rubber or cork (ASTM D1752).
 - 1. Thickness: 1/2 inch.

2.03 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) yield strength; deformed billet steel bars; unfinished.

2.04 CONCRETE MATERIALS

- A. Obtain cementitious materials from same source throughout.
- B. Concrete Materials: Provide in accordance with State of Idaho Highways standards.
- C. Air-Entraining Admixtures: ASTM C260/C260M.

2.05 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
- B. Concrete Properties: City of Pocatello - "City Mix".
 - 1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days; 4,000 psi.
 - 2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
 - 3. Cement Content: Minimum 611 lb per cubic yard.
 - 4. Water-Cement Ratio: Maximum 45 percent by weight.
 - 5. Total Air Content: 6 percent, determined in accordance with ASTM C173/C173M.
 - 6. Maximum Slump: 3 inches.
 - 7. Maximum Aggregate Size: 3/4 inch.

2.06 MIXING

- A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
- B. Transit Mixers: Comply with ASTM C94/C94M.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.02 SUBBASE

- A. Prepare subbase in accordance with State of Idaho Highways standards.

3.03 PREPARATION

- A. Moisten base to minimize absorption of water from fresh concrete.
- B. Coat surfaces of manhole frames with oil to prevent bond with concrete pavement.

3.04 FORMING

- A. Place and secure forms to correct location, dimension, profile, and gradient.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.05 REINFORCEMENT

- A. Place reinforcement at bottom of slabs-on-grade.

3.06 COLD AND HOT WEATHER CONCRETING

- A. Follow recommendations of ACI 305R when concreting during hot weather.
- B. Follow recommendations of ACI 306R when concreting during cold weather.
- C. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

3.07 PLACING CONCRETE

- A. Place concrete in accordance with State of Idaho Department of Transportation standards.
- B. Do not place concrete when base surface is wet.

- C. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.
- D. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.

3.08 JOINTS

- A. Provide tooled joints.
 - 1. At approx. 8 feet intervals.

3.09 FINISHING

- A. Sidewalk Paving: Light broom, texture perpendicular to direction of travel with troweled and radiused edge 1/4 inch radius.

3.10 TOLERANCES

- A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.

3.11 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian traffic over pavement for 7 days minimum after finishing.

END OF SECTION 32 1313

SECTION 32 3113 - CHAIN LINK FENCES AND GATES**PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Fence framework, fabric, and accessories.
- B. Manual gates and related hardware.

1.02 RELATED REQUIREMENTS

- A. Section 32 1313 - Concrete Paving: Concrete for equipment pad with thickened edge.

1.03 REFERENCE STANDARDS

- A. ASTM A392 - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric; 2011a.
- B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2015.
- C. ASTM F567 - Standard Practice for Installation of Chain-Link Fence; 2014a.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on fabric, posts, accessories, fittings and hardware.
- C. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Chain Link Fences and Gates:
 - 1. Master-Halco, Inc: www.masterhalco.com.
 - 2. Merchants Metals: www.merchantsmetals.com.
 - 3. Anchor Fence Wholesalers: www.anchorfence.com.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

- A. Posts, Rails, and Frames: Formed from hot-dipped galvanized steel sheet, ASTM A653/A653M, HSLAS, Grade 50, with G90 (Z275) zinc coating.
- B. Wire Fabric: ASTM A392 zinc coated steel chain link fabric.
- C. Concrete: Type specified in Section 32 1313.

2.03 COMPONENTS

- A. Line Posts: 2.38 inch diameter. Provide 8" x 8" x 1/2" galvanized steel base plate at all line posts.
- B. Corner and Terminal Posts: 4.0 inch. Provide 8" x 8" x 1/2" galvanized steel base plate at all corner and terminal posts.
- C. Gate Posts: 4 inch diameter.
- D. Top and Brace Rail: 1.66 inch diameter, plain end, sleeve coupled.
- E. Gate Frame: 1.66 inch diameter for welded fabrication.
- F. Fabric: 2 inch diamond mesh interwoven wire, 6 gage, 0.1620 inch thick, top selvage knuckle end closed, bottom selvage twisted tight.
- G. Tension Wire: 6 gage, 0.1620 inch thick steel, single strand.
- H. Tie Wire: Manufacturer's standard tie wire, not aluminum.
- I. Expansion Anchors: Min. 1/2" dia. x 6".

2.04 ACCESSORIES

- A. Caps: Cast steel galvanized; sized to post diameter, set screw retainer.

- B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings; steel.
- C. Hardware for Single Swinging Gates: 180 degree hinges, 2 for gates up to 60 inches high, 3 for taller gates; fork latch with gravity drop and padlock hasp; keeper to hold gate in fully open position.
- D. Privacy Slats: Heavy duty vinyl strips, sized for vertical installation.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install framework, fabric, accessories and gates in accordance with ASTM F567.
- B. Coordinate with concrete installation.
- C. Anchor posts to top of thickened edge concrete slab as shown on the Construction Documents.
- D. Place fabric on outside of posts and rails.
- E. Install center brace rail on corner gate leaves.
- F. Position bottom of fabric 2 inches above finished slab.
- G. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers.
- H. Attach fabric to end, corner, and gate posts with tension bars and tension bar clips.
- I. Install bottom tension wire stretched taut between terminal posts.
- J. Do not attach the hinged side of gate to building wall; provide gate posts.

3.02 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch.
- B. Maximum Offset From True Position: 1 inch.

END OF SECTION 32 3113

END OF DIVISION 32