**SECTION 13 1100**

**SWIMMING POOLS (STAINLESS, FULL TILE, OR TILE TRIM)**

This section includes editing notes to assist the user in editing the section to suit project requirements. These notes are included as hidden text, and can be revealed or hidden by the following method in Microsoft Word:

 Display the FILE tab on the ribbon, click OPTIONS, then DISPLAY. Select or deselect HIDDEN TEXT.

This master specification section has been prepared by Bradford Products LLC for use in the preparation of a project specification section covering above-grade stainless steel swimming pools, either shop fabricated or site constructed, with either stainless steel, fully tiled, or partially tiled finish.

The following should be noted in using this specification:

Hypertext links to specific websites are included after manufacturer names and names of organizations whose standards are referenced within the text, to assist in product selection and further research. Hypertext links are contained in parenthesis and shown in blue, e.g.:

 [(www.astm.org](http://(www.astm.org) )

Optional text requiring a selection by the user is enclosed within brackets, e.g.: "Section [09 0000.] [\_\_\_\_\_.]"

Items requiring user input are enclosed within brackets, e.g.: "Section [\_\_\_\_\_ - \_\_\_\_\_\_\_\_]."

Optional paragraphs are separated by an "OR" statement, e.g.:

\*\*\*\* OR \*\*\*\*

For assistance on the use of the products in this section, contact Bradford Products LLC by calling 800-438-1669, by email at paul@bradfordproducts.com, or visit their website at [www.bradfordproducts.com.](http://www.bradfordproducts.com)

1. **GENERAL**
	1. SUMMARY

Edit the following paragraphs to include only those items specified in this section.

* + 1. Section Includes:
			1. Pool shell.
			2. Pool mechanical system.
			3. Pool heating system.
			4. Interior pool finish.
			5. Final testing and demonstration to Owner.

Coordinate the following paragraphs with other sections in the Project Manual.

* + 1. Related Sections:
			1. Division 01: Administrative, procedural, and temporary work requirements.
			2. Section [03 3000 - Cast-in-Place Concrete:] [\_\_\_\_\_ - \_\_ \_\_\_\_\_]: Concrete deck.
			3. Section [22 1100 - Facility Water Distribution:] [\_\_\_\_\_ - \_\_ \_\_\_\_\_]: Water supply.
			4. Section [22 1300 - Facility Sanitary Sewerage:] [\_\_\_\_\_ - \_\_ \_\_\_\_\_]: Drainage system.
			5. Section [26 1000 - Medium Voltage Electrical Distribution:] [\_\_\_\_\_ - \_\_ \_\_\_\_\_]: Power supply.
	1. REFERENCES

In the following paragraphs, retain only those reference standards that are used elsewhere in this section.

* + 1. American National Standards Institute (ANSI) ([www.ansi.org](http://www.ansi.org)) A108/A118/A136.1 - American National Specifications for the Installation of Ceramic Tile.
		2. American National Standards Institute / Association of Pool and Spa Professionals / International Code Council (ANSI/APSP/ICC) [(www.apsp.org](http://www.apsp.org)) 1 - American National Standard for Public Swimming Pools.
		3. American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME) ([www.asme.org](http://www.asme.org)) A112.19.8 - Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs, Includes Addenda A.
		4. American Welding Society (AWS) [(www.aws.org](http://www.aws.org)):
			1. D1.1/D1.1M - Structural Welding Code - Steel.
			2. D1.6/D1.6M - Structural Welding Code - Stainless Steel.
		5. Association of Electrical Equipment and Medical Imaging Manufacturers (NEMA) ([www.nema.org](http://www.nema.org))) 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
		6. ASTM International (ASTM) ([www.astm.org](http://www.astm.org)):
			1. A36/A36M - Standard Specification for Carbon Structural Steel.
			2. A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
			3. D1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
			4. D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
			5. D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.
			6. D2855 - Standard Practice for Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets.
		7. International Association of Plumbing and Mechanical Officials / American National Standards Institute (IAPMO/ANSI) (www.iapmo.org) - Certification program.
		8. International Organization for Standardization (ISO) [(www.iso.org)](http://www.iso.org) 9001 - Quality Management Systems - Requirements.
		9. National Fire Protection Association (NFPA) ([www.nfpa.org](http://www.nfpa.org)) 70 - National Electrical Code.
		10. National Sanitary Foundation/American National Standards Institute (NSF/ANSI) ([www.nsf.org](http://www.nsf.org)) Standard 50 - Equipment for Swimming Pools, Spas, Hot Tubs and Other Water Facilities.
	1. SYSTEM DESCRIPTION
		1. Pool Walls and Floors: [Stainless steel.] [Stainless steel with tile trim finish.] [Fully tiled finish.]
		2. Gutter Pool: [Stainless Steel Type 316L.] [Stainless Steel Type 304L.]
		3. Skimmer Pool: NSF approved stainless steel skimmer, substitutions not permitted.
		4. Surge Tank: [Cast-in-place concrete per Section [03 3000] [\_\_ \_\_\_\_]. [Stainless steel.] [Fiberglass.]
	2. SUBMITTALS

Limiting submittals to only those actually required helps to minimize liability arising from the review of submittals. Minimize submittals on smaller, less complex projects.

Include the following for submission of shop drawings, product data, and samples for the Architect's review.

* + 1. Submittals for Review:
			1. Shop Drawings:
				1. Show pool layout, dimensions, wall and floor panel layout, and stiffeners.
				2. Include diagrammatic layout for equipment and piping.
				3. Show termination and finish details for interface with adjacent construction.
			2. Product Data: Manufacturer’s descriptive data for:
				1. Piping.
				2. Filters.
				3. Pumps and strainers.
				4. Heaters.
				5. Chemical controller, feeder, and storage tank.
				6. Valves.
				7. Gauges, thermometers, and flow meters.
				8. Inlets and gratings.
			3. Performance Criteria: For products specified by performance criteria only, document conformance with design calculations or past performance records with list of previous installations and contact information.

Include the following for submission of quality control submittals. These submittals are intended for the Owner's record purposes and are not intended to be reviewed by the Architect.

* + 1. Quality Control Submittals:
			1. Certificates of Compliance: Submit certification that pool system complies with requirements of ISO 9001 and applicable codes, ordinances, rules, and regulations, ANSI/APSP/ICC 1, and ANSI/ASME A112.19.8.

Include the following for submission of closeout submittals for the Owner's record purposes.

* + 1. Closeout Submittals:
			1. Operation and Maintenance Data: Include data for pool and pool equipment, and warranty information.
			2. Project Record Documents.
			3. Owner’s Certificate of Instruction.
	1. QUALITY ASSURANCE

The following paragraphs specifies a minimum level of experience required of the parties performing the work of this section. Retain if required, and edit to suit project requirements.

* + 1. Manufacturer and Equipment Supplier Qualifications:
			1. Minimum 5 years experience in work of this Section, or successful completion of minimum 5 projects of similar scope and complexity within past 5 years.
			2. Manufacture all stainless steel components in-house.
			3. ISO 9001:2015 certified.

Include the following for larger, more complex projects where factory observation of pool installation is necessary. Delete for smaller, less complex projects.

* + 1. Pool Shell and Equipment Installer Qualifications:
			1. Minimum 5 years experience in work of this Section, or successful completion of minimum 5 projects of similar scope and complexity within past 5 years.
			2. Trained by manufacturer of pool system.
		2. Regulatory Requirements: Perform work in accordance with applicable codes, ordinances, rules, and regulations.
		3. Pool Equipment System:
			1. Tested to NSF/ANSI 50.

Include the following paragraph when an NSF approval is required.

* + - 1. [Bear NSF Approval Rating.]
			2. Tested to ANSI/APSP/ICC 1; certified by IAPMO.

Include the following for a pre-installation conference attended by the parties performing the work of this section.

* + 1. Pre-Installation Conference:
			1. Convene at site [2] [\_\_] weeks prior to beginning work of this Section.
			2. Attendance: Architect, Contractor, pool installer, [pool manufacturer’s representative,] and related trades who’s work affects pool installation.
			3. Review and discuss: Scheduling, delivery, installation, protection, and related work.
	1. DELIVERY, STORAGE AND HANDLING
		1. Store pool system components off ground and protect with waterproof covering.
		2. Protect piping and accessories from exposure to ultraviolet and from contact with chemicals that could cause damage or deterioration.
	2. WARRANTIES
		1. Furnish pool system manufacturer’s 25 year warranty providing coverage for:
			1. Workmanship, materials, and performance of pool wall and floor system.
			2. Structural stainless steel bracing system, stainless steel gutter, stainless steel floor, NSF approved stainless steel skimmer, and stainless steel wall panel systems against structural failure.

Include the following paragraph for tile pool finishes.

* + 1. Furnish tile setting material manufacturer’s [one] [ ] year warranty against loss of tile adhesion.
1. **PRODUCTS**
	1. MANUFACTURERS
		1. Contract Documents are based on products by Bradford Products LLC. [(www.bradfordproducts.com](http://www.bradfordproducts.com))

Edit the following to indicate whether or not substitutions will be permitted for the products in this section.

* + 1. Substitutions: [Under provisions of Division 01.] [Not permitted.]
	1. MATERIALS

In the following paragraph, select 304L for fully-tiled and PVC-lined pools and 316L for partially-tiled and all stainless steel pools.

* + 1. Stainless Steel: ASTM A240/A240M, Type [304L,] [316L,] buffed non-directional finish where exposed.
		2. Steel: ASTM A36/A36M, hot-rolled.
	1. EQUIPMENT
		1. Filtration and Sanitation System:
			1. Provide complete filtration system with all components.
			2. Include pumps, filters, flow meters, gages, valves, and controls as required.
		2. Pumps and Motors:
			1. Type and capacity as dictated by pool design to meet required flow rate.
			2. Filtration pumps: Sized to pool capacity.
			3. Motors:
				1. Totally enclosed, fan-cooled (TEFC) or open drip-proof (ODP), with hygroscopic insulation, service factor 1.15, insulation Class F, sized to operate at full load and speed, designed for continuous operation.
				2. Motor starter with current interrupter overload.
				3. Combination motor starters: Hand-off auto switch and positive overload heater coil; as manufactured by Furnas, Square D, or Westinghouse.
				4. Electrical enclosures: NEMA 250, Type 12, suitable for surface mounting.
		3. Heater: [Electric] [Gas] [Heat exchanger] type, sized to suit pool capacity.
		4. Valves and Piping:
			1. Piping: Polyvinyl chloride (PVC) composition; ASTM D1784 or ASTM D1785, Schedule 40 or 80.
			2. Cement: ASTM D2564.
			3. Provide check and ball valves as required; by same manufacturer when practical.
			4. Valve connections: Suitable for connection of adjoining pipe; of pipe size values.
			5. Hangers and supports: Sized to project conditions.
		5. Pool Fittings:
			1. Compatible with pool system components.
			2. Sized to code requirements; ensure proper hydraulic balance.
			3. Stainless steel skimmer: NSF approved.
	2. ACCESSORIES
		1. Fasteners: Stainless steel.

Include the following two paragraphs for tile pool finishes. Insert desired tile type, size, and color.

* + 1. Tile:
			1. Type: [Frostproof ceramic.] [Frostproof porcelain.] [Glass.] [\_\_\_\_.]
			2. Source: [\_\_\_\_] by [\_\_\_\_].
			3. Size: [\_\_ x \_\_] inches by [\_\_] inch thick.
			4. Color: [\_\_\_\_].
		2. Tile Setting Materials: ANSI A118.3, epoxy type, as manufactured by Laticrete International, Inc.
	1. FABRICATION
		1. Fabricate interior of pool using manufacturer’s standard processes and quality control.
		2. Perform welding using AWS certified welders in accordance with AWS D1.1/D1.1M and D1.6/D1.6M.
		3. Utilize Type 316L stainless steel filler metal at welded joints to produce uniform raised weld. Do not grind raised welds.
		4. Wall Panels:
			1. Precision fabricated for welded installation.
			2. Cut perforations for skimmers, lights, and fittings into panels using CNC laser technology.
			3. Support panel-to-panel joints using prefabricated support brace manufactured from 10 gage stainless steel.
			4. Prevent dissimilar metals from direct contact with stainless steel.
			5. Support panels on rust inhibited, stainless steel clad, steel base [stainless steel] support.
			6. Use stainless steel couplings; plastic through-wall fittings not permitted.
			7. Provide UL approved welded-in stainless steel light niche.
		5. Floor Panels: [3/16 inch stainless steel plate] [7 gauge].
		6. Tie stainless steel wall stiffeners at 16 inches on center to floor structure for maximum structural rigidity.
		7. Fabricate structural pool frame at 16 inches on center to accommodate pool floor or pool floor slope.
1. **EXECUTION**
	1. EXAMINATION
		1. Prior to beginning installation verify that pool slab:
			1. Has minimum 3-1/2 inches of leveled concrete over waterproofing layer.
			2. Is level within 1/8 inch from high to low point across entire floor.
	2. INSTALLATION

Pool system must be installed on a sound, engineered concrete footer, slab, pillar system, or structural I-beams as recommended by pool manufacturer and required by applicable codes.

* + 1. Install equipment and system in accordance with manufacturer’s instructions and approved Shop Drawings.
		2. Perform welding using AWS certified welders in accordance with AWS D1.1/D1.1M and D1.6/D1.6M.
		3. Set equipment on secure foundations.
		4. Make piping joints in accordance with ASTM D2855.
		5. Support overhead piping and at connections to valves, pumps, and equipment.
		6. Install electrical components in accordance with NFPA 70.
		7. Install tile in accordance with ANSI A108.6, thin set with epoxy adhesive.
	1. FIELD QUALITY CONTROL
		1. Piping Testing:
			1. After installation and before covering piping, test to minimum 20 PSI pressure for 12 hours.
			2. If necessary, repair leaks and retest. Do not cover piping until proven watertight.
			3. Furnish test results prior to covering piping.
		2. Flushing: Flush completed piping with clean water prior to making final connections.
		3. Water Treatment:
			1. Submit chemical analysis of source water supply showing:
				1. Total alkalinity in PPM.
				2. Calcium hardness in PPM.
				3. Chlorine in PPM.
				4. pH.
			2. Treat and balance pool water just prior to Substantial Completion.
				1. Establish total alkalinity of 80 to 150 PPM and calcium hardness of 175 to 250 PPM.
				2. Balance pool water to local health code requirements.
	2. ADJUSTING
		1. Adjust pool system for proper operation through all cycles.
	3. CLEANING
		1. Clean pool, equipment, and related surfaces.
	4. DEMONSTRATION
		1. Demonstrate proper operation and maintenance of pool system to Owner.

 END OF SECTION