



Natare[®] Perimeter Recirculation Systems

Information and Technical Data



Engineered supply and return systems for swimming pools, water features and aquatic facilities.

Natare Corporation

Swimming Pools, Aquatic Facilities and Water Features



Natare Corporation is one of the most respected suppliers of equipment, systems and services for commercial and public swimming pools, water features and aquatic recreation in the United States and around the world.

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Natare offers a comprehensive selection of equipment and systems, in combination with consulting, engineering and technical services. Whether it's design, construction, renovation or operation, Natare is part of state-of-the-art aquatic facilities around the globe.

The following information is a collection of topics pertaining to Natare® Perimeter Recirculation Systems. These documents include product support information as well as typical specifications and drawings.

We invite all inquiries concerning aquatic or water feature development, planning, construction or renovation. Additional information can be found on-line at www.natare.com or you may contact us at (800) 336-8828.

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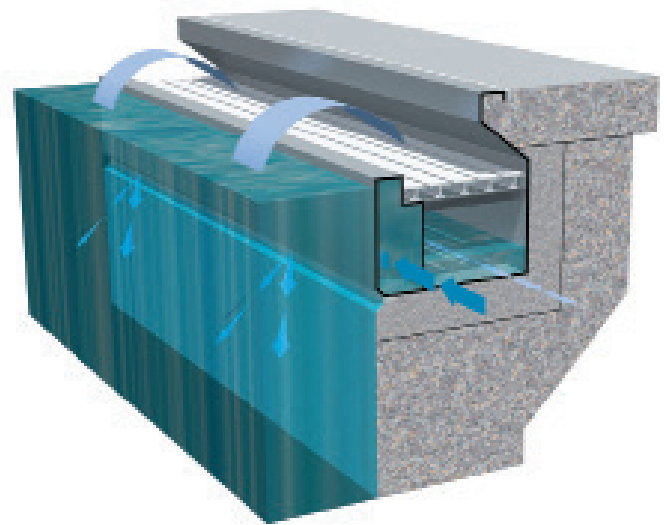
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Introduction to Perimeter Recirculation Systems

Low-maintenance, high-efficiency pool recirculation systems

Your Natare Stainless Steel Perimeter Recirculation System performs all necessary functions for the proper operation of a pool's hydraulic system: supply, skimming, and return. Note that in "trough only" configurations, the supply portion of the system is handled by other means. The recirculation system features a continuous perimeter conduit that uniformly distributes clean, filtered, disinfected water to the pool through specially designed orifices below the surface of the water. These orifices are evenly spaced around the perimeter of the pool and are designed for a flow of 6 gallons per minute (1.36 cubic meters per hour) per inlet. This creates a greater circulation of clean water into the shallow end of the pool where heavy user loads are frequent. There are no removable orifices or nozzles that swimmers could tamper with or that require adjustment or replacement. These inlets are designed to accomplish complete recirculation and uniform disinfection at all times.

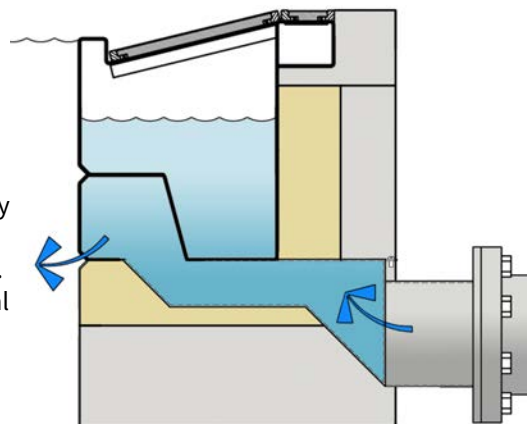


Continuous surface skimming is also essential for effective filtration since 80% of the dirt, bacteria, and debris floats on top of the water. The most efficient method of skimming is to remove only a thin layer at the surface, and only prefabricated gutter systems can achieve the exact levelness required for efficient operation. A traditional poured concrete or field constructed gutter cannot achieve the tolerances necessary to perform this function. A Natare Stainless Steel System provides the precision required for the best possible recirculation and skimming of your swimming pool.



Water Supply and Distribution in Pool Design

The proper supply and distribution of clean, filtered water is of primary concern in designing the return system for a public, institutional, or commercial swimming pool. Even the very best filtration and disinfection system is of little value if treated water is not properly and uniformly distributed throughout the swimming pool. Inlet return systems with too few inlets for return water, or systems with inlets incorrectly placed can cause “dead” spots where little treated water ever reaches. These areas are generally identified by the deposition of fine dirt on the pool bottom, the presence of algae on the poolside walls or bottom, and a general lack of clarity in the pool. Other indications of such “short-circuiting” include wide differences in residual chemical levels in various areas of the swimming pool.



In many public swimming pools and particularly those constructed prior to wide spread adoption of the stainless steel perimeter system, the overall quality of swimming pool water is less than desirable. Maintenance of water clarity, quality and disinfecting chemical residuals is problematic at best. Pool turnover and flow rates generally do not provide adequate recycling of the pool water to keep pace with the rate at which organic matter, debris and other foreign materials enter the pool from both the atmosphere and heavy bather loads. Large areas of the pool are simply not treated as the flow patterns simply do not provide proper mixing and dispersion of clean water to the pool.

Prior to the late 1960's, public pool design was governed largely by practices developed for municipal water treatment and residential pool construction. The filtered water was returned to the pool through inlets on the sides and occasionally the ends of the pool tank. These inlets were located approximately 12 inches to 39-inches (300 to 1000-m) below the water level and operated at flow rates that required high system pressure and produced fairly high head loss. Typically, such inlets included variable directional nozzles as part of the inlet that were intended to allow some degree of directional and flow adjustment to compensate for the lack of water supply and distribution.

Unfortunately, such nozzles soon became clogged, broke or were easily removed shortly thus leading to very limited water distribution and mixing in the pool environment. Such design practices lead to large areas of un-circulated or “dead” water in public and commercial swimming pools, and appalling sanitary conditions in traditional inlet pools as a result of the lack of proper distribution of disinfectant residuals.

Such concerns over swimming pool water quality resulted in careful examination of how pools actually worked, particularly with regard to water recirculation systems. In the 1970's, the National Sanitation Foundation studied these water circulation patterns and reported the results in [Functions and Parameters of Perimeter Overflow Systems for Swimming Pools](#). Studies were also completed by the Ralph M. Parsons Laboratory for Water Resources and Hydrodynamics at the Massachusetts Institute of Technology, as well as Public Health Departments in New York, Ohio and Michigan.

This research provided solid evidence of the benefits of continuous perimeter supply systems as compared to the then-current practices of using widely spaced inlets. It was concluded that continuous perimeter supply systems provided far superior water distribution than the spaced inlet system.

The continuous perimeter supply system concept has now been adopted in public and commercial pool construction throughout the United States. In these systems, a continuous pre-engineered stainless steel fabricated water supply conduit circles the pool perimeter with strategically spaced supply inlets spaced no greater than 3 foot on center. These supply orifices are located approximately 4 to 14 inches (100 to 355-mm) below the water surface and are directed downward at a 45° angle.

Such systems operate on the principal of smaller amounts of water introduced through many inlets. In the continuous perimeter supply system, hundreds of individual inlets supply smaller amounts of water (4 to 5-gpm GPM (.90 to 1.13-m³/hour) per inlet (plus or minus 10%) versus a few inlets supplying high volumes of water as high pressure.



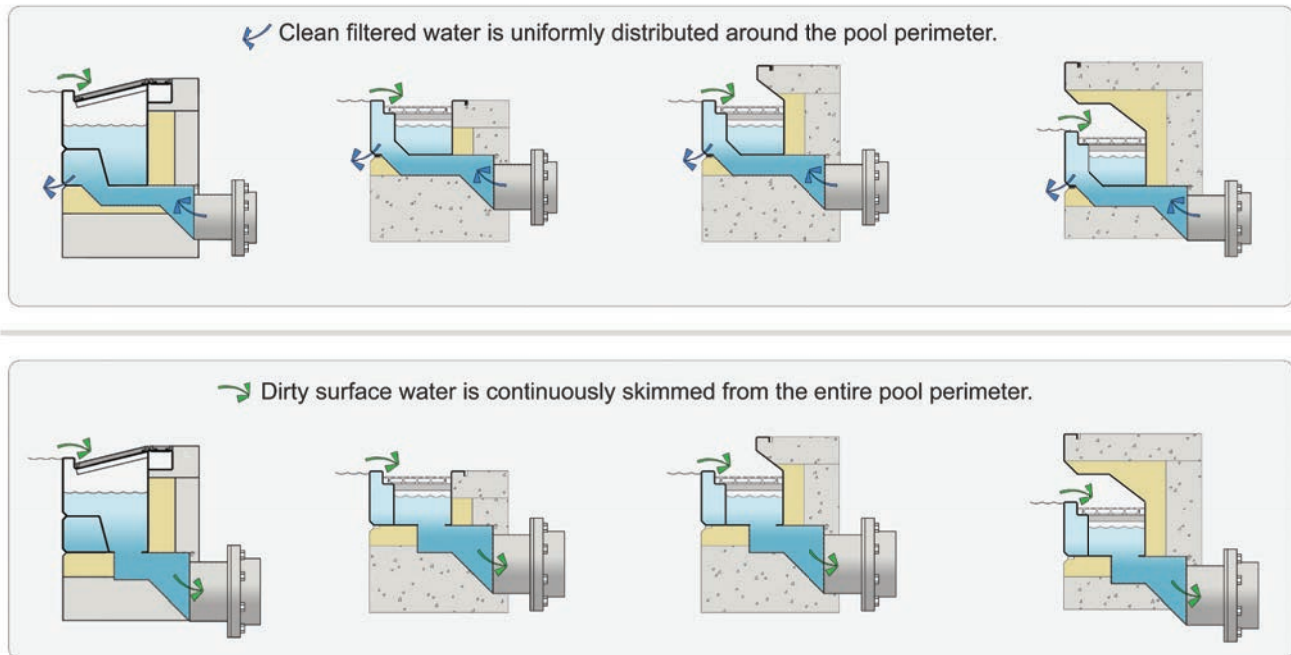
Large volumes of water are uniformly supplied around the perimeter with high efficiency and little head loss. The close spacing of the inlets continuously around the perimeter ensures thorough mixing of return water with the contents of the pool. This configuration eliminates the “dead” areas or areas of limited circulation which occur with widely spaced inlets on the pool walls or floor.

Continuous Perimeter Supply System

The continuous perimeter supply system was pioneered by Natare Corporation and others, and this unique concept was soon adopted as the standard design in commercial and public pools. This unique system eliminates buried piping around the perimeter of the pool, provides for uniform water removal from the entire perimeter, and delivers clean, filtered water throughout the pool.

A number of different designs have been proposed for inlet flow in perimeter gutter systems, but the Natare low pressure, high efficiency approach has proven the most efficient and economical. The use of widely spaced inlets requires high pressure to provide minimal mixing and dispersion of water returning to the pool. Rather than requiring excessive system operating pressures, the high horsepower (kilowatts) of high pressure systems, and head loss, the Natare system operates at approximately 5-psi (.345-bar), which are 1/3 to 1/5 of the high pressure systems.

The continuous perimeter supply concept also provides the ability for the pool designer or contractor to balance the flow so that clean, filtered water is returned the most heavily-used areas in the pool. From observation of actual user patterns in swimming pools, it is obvious that the majority of the activity occurs in water depths above 5-foot (1.52-m). These shallow areas are the portions of the pool that see both the original water entry as well as continued play activities. The ratio of water volume to user is much lower in shallow areas and the ratio of surface area to depth is greater thus the concentration of dirt, debris and contaminants is proportionally and significantly greater.



Continuous perimeter supply systems provide the opportunity to economically increase the flow of clean water into shallow pool areas while reducing that portion of the return flow that is directed to the deeper water. This balancing of return flow against the swimmer load is accomplished by simply increasing the number and proximity of the inlets in the shallow water while



Water Supply and Distribution in Pool Design (Continued)

reducing the number in deep water.

A number of designs and configuration for pool inlets have been considered. The best systems use a precisely machined stainless steel flow insert in the lower corner of the supply system that introduces water on a 45° angle. Less expensive systems use a punched hole. For cost reasons, some manufacturers simply punch a hole and insert a small plastic nozzle. Other systems that incorporate PVC pipe as a supply chamber have made use of a conventional pool return inlet on a much greater spacing. By far the most successful and efficient is the stainless steel flow insert, which guarantee even balanced flow. While this design requires more attention to design and fabrication, the installation is tamperproof and is not effected by the actions of swimmers.

Many different shapes of perimeter gutter systems have been developed, but all share the basic principles of multiple smaller inlets for continuous perimeter supply and continuous perimeter skimming from the water surface.

While a few areas of the United States still allow public swimming pools to be constructed using piped inlet supply systems in conjunction with skimmers, this design is largely limited to the smaller apartment, hotel or condominium pools. Continuous perimeter supply systems have become the standard for virtually all large public, commercial and institutional swimming pool installations.

The benefits of a continuous perimeter gutter system are significant, whether the pool is used for competition. In a competition venue, the low pressure inlets ensure that the return water flow never interferes with the competition. No jets of water or high pressure streams entering the pool and compromising the performance. At the same time, the continuous perimeter overflow design ensures that the waves and surge created by competition are quickly and completely swallowed by the gutter system.

In a recreational environment, the dirt load and debris is much higher than in the competition environment. The continuous perimeter gutter system ensures that clean, treated water is uniformly distributed to the entire pool rather than in areas immediately ahead of the inlets. The continuous perimeter skimming removes the contaminated water from the entire perimeter, not solely from in front of a few small skimmer openings.

Most, if not all of the State Health Departments approve and require the use of continuous perimeter supply systems.

Hydraulic Considerations on Stainless Steel Perimeter System Design

The hydraulic design of the Natare Perimeter Gutter Flow System is the culmination of years of actual operating experience with stainless steel perimeter systems coupled with sound theoretical analysis and computations to provide optimum satisfaction of the end user. The predetermined design of the stainless steel perimeter system is an attempt to accommodate the need for thorough distribution and mixing of swimming pool water while taking into consideration mechanical simplicity. The design of Natare Perimeter Overflow System requires the evaluation of several factors, the most important of which are detailed below.

1. Inlet Opening Diameter:

Natare has made the decision to make the inlet fitting diameter slightly smaller than .375-in., actually 8-mm. The primary reason for this inlet design is to preclude the entrapment of fingers and toes. Additionally, a stainless steel inlet permanently installed directly into the supply conduit also provides a “tamper resistant” return inlet to the pool and has been demonstrated to be quite safe even where small children are concerned.

2. Head loss:

The pressure loss through the supply inlet is a major portion of the total mechanical system head loss for a pool. There is considerable conjecture regarding the proper gallons per minute per flow rate in a swimming pool system. Natare’s experience with perimeter systems indicates that a value of 4 to 5-gpm GPM (.90 to 1.13-m³/hour) per inlet (plus or minus 10%) appears to provide the most satisfactory performance and achieves the greatest efficiency and energy savings in pool system design.



It has been shown that the proper design of the supply conduit will result in a perimeter system head loss of approximately 6 psi. This value is based upon the combined analysis of the conduit loss in addition to the orifice loss. The conduit loss must comprise a small portion of the system head loss if the distribution of water to the pool is to be done in an efficient, uniform, and balanced manner equally around the pool perimeter. Experience and in-depth analysis shows that if maximum conduit velocities are kept below 5.5 ft. /second, supply tube hydraulics are greatly simplified and losses are held to a minimum.

3. Inlet Spacing:

The spacing and location of the .31-in. inlets determines the distribution of filtered disinfected water back into the pool. The designer of a swimming pool must make a judgment as to whether the overall pool shape, range of pool depths, and pattern of activity in the pool dictate equal distribution of return water around the perimeter or require special spacing and location of inlets. A few basic guidelines are considered in achieving a uniformly distributed flow throughout the pool that best suits the pool use. For example;

- A. Inlets are placed below the rope hook locations and not in the direct path of an oncoming swimmer on the end walls of a competition course.
- B. Inlets may be placed in the areas of the pool with higher activity patterns than others. Since the shallower areas of a pool may most frequently see a greater number of users than the deeper regions, more inlets would be placed in the shallower areas.

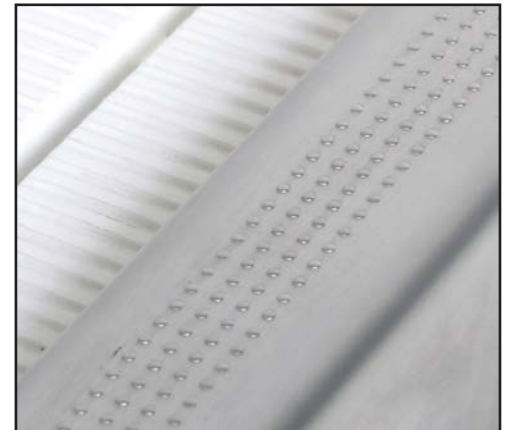
4. Installation:

Installation of the inlet is done in plant as a part of the production process. A pressure test is also performed “in field” as part of the installation process.

Natatread Slip-Resistant Surfaces

Horizontal and sloping surfaces in a swimming pool or aquatic environment must provide a certain measure of slip-resistance to provide sure footing and a safe surface. While many pool construction materials such as ceramic tile and concrete are inherently slip-resistant, other smooth materials like stainless steel and various plastics are not appropriate for use in aquatic environments without some means to provide a slip-resistant surface.

In a continuing effort to improve the process of slip-resistant treatment, we have now developed a process that allows us to punch the metal surface from the underside of the stainless steel, using specialized tooling that does not penetrate the surface, but instead produces a pattern of small dimple-like projections or protrusions, similar to the surface on Braille name plates. The pattern is an extremely uniform and aesthetically pleasing surface that is also quite slip-resistant. **This surface is also comfortable to the touch and is less abrasive** as it does not produce the “cheese-grater effect” of many slip-resistant surfaces.



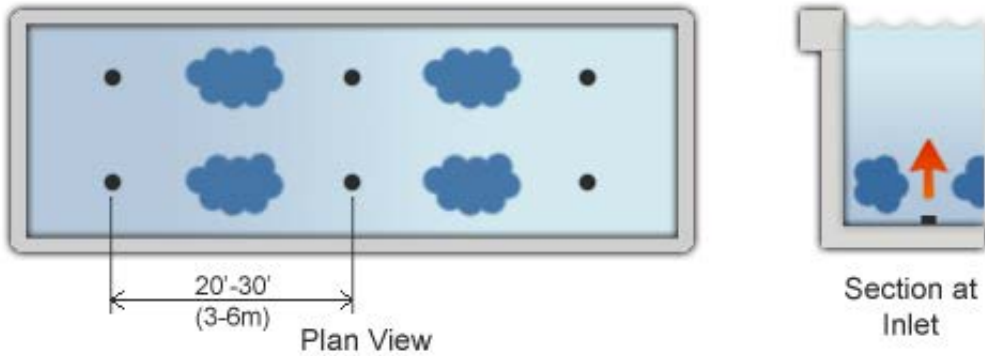
In addition to the obvious benefits of slip-resistance, the tread pattern is a series of protrusions up from the surface, rather than a profile or pit carved into the surface. Dirt does not accumulate, water sheds away rather than evaporating and the inherent corrosion-resistance of the stainless steel surface is maintained. The configuration of the profile is inherently self-cleaning and does not wear or degrade over time.

Since late spring 2001, Natare has offered this new treatment as the standard to replace sand blasting on the horizontal surfaces of all Natare perimeter recirculation systems. There have been no reported injuries or accidents involving the the slip-resistance of a Natare perimeter gutter.

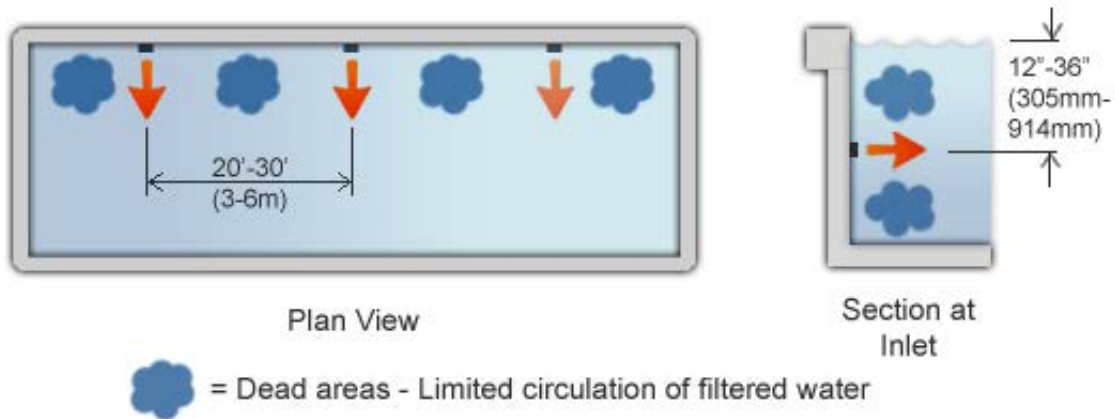


Circulation of Filtered Water

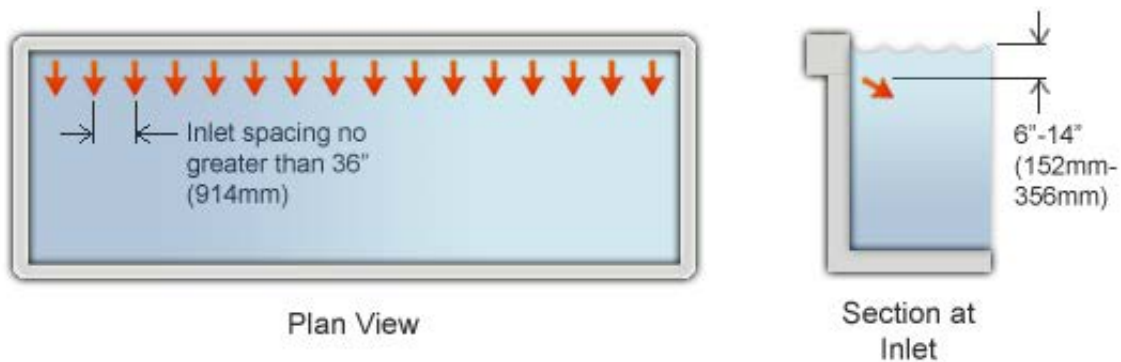
Typical pool construction with floor inlets:



Typical pool construction with piped inlets:



Typical pool construction with continuous perimeter supply:



Benefit - No dead areas - Equal distribution throughout pool.



Automatic Surge Control Assemblies

Your pool may include Automatic Surge Control Assemblies. The use of Automatic Surge Control Assemblies allows for in-pool surge capacity of one gallon per square foot of surface area. This matches most state code requirements. This in-pool surge capacity eliminates the need for a surge tank and its associated costs.

A one square foot “slab” of water that is 1 5/8” in thickness has a volume of one gallon. Natare Automatic Surge Control Assemblies are designed so that the normal pool operating level during quiescence is 1 5/8” below the lip of the Natare Stainless Steel Recirculation System. Since the water has 1-5/8” to rise before it reaches the gutter lip, you have one gallon of surge capacity per square foot of pool surface area. Your pool should be maintained at this level either with a manual-fill of the pool or by adjusting the “shut off probe” length of your Natare Automatic Water Level Control System.



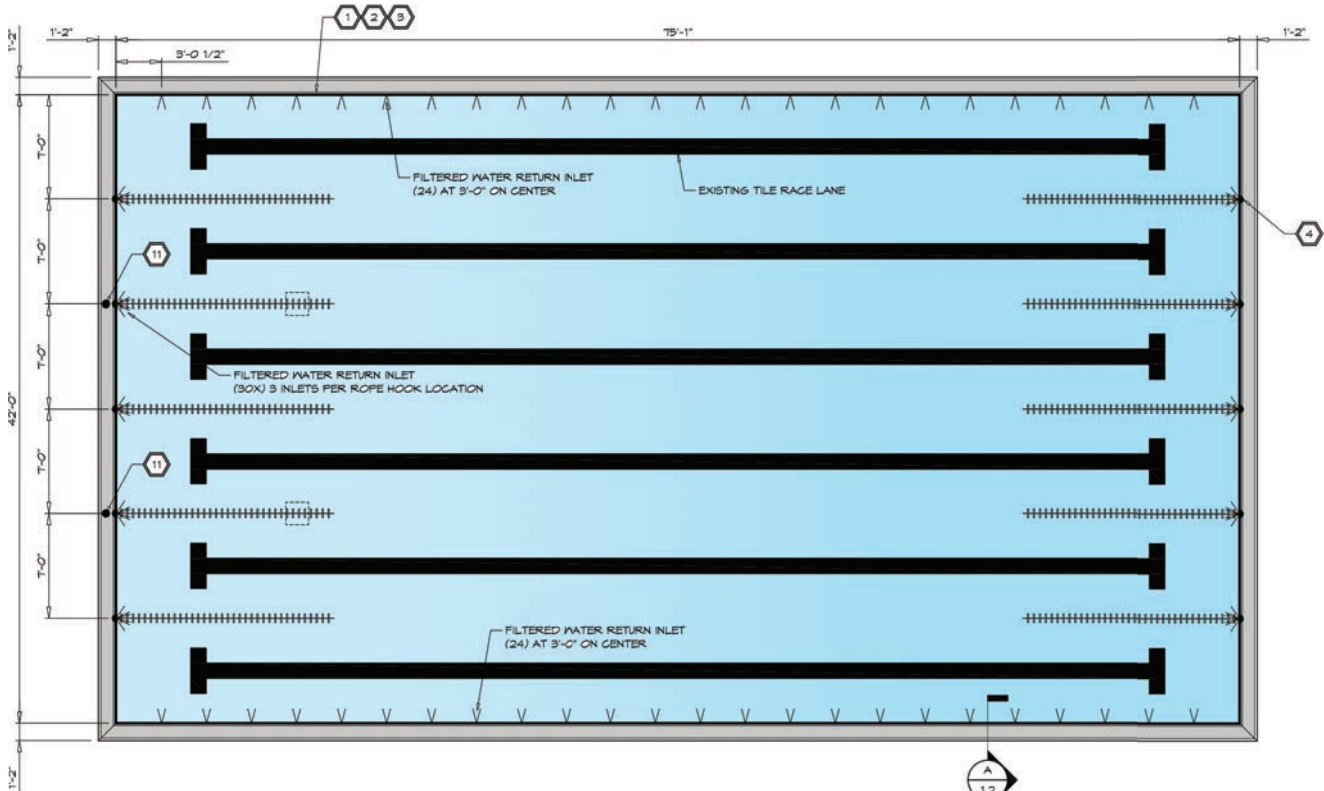
In a worst case scenario, when the pool is teeming with frolicking bathers, the water displaced by their bodies will cause the level in the pool to rise. Without a means of absorbing this surge, your gutter trough would flood, and skimming would cease. However, as the water rises, the internal float mechanism inside the Automatic Surge Control Assembly will rise, limiting the flow of surface water through the assembly.

Each Automatic Surge Control Assembly has a capacity of approximately 50 gallons per minute. In most cases, these assemblies are located around the perimeter of your pool in quantities to handle approximately 50% of your pool's total recirculation flow rate.

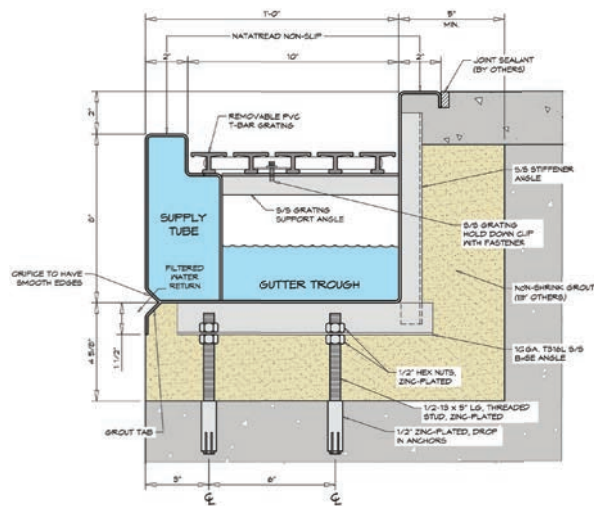


POOL EQUIPMENT LIST					
ITEM	QTY.	DESCRIPTION	PROVIDED BY	INSTALLED BY	DETAIL
1	234-2"	V-SERIES 800, 12 GA. TYPE 316L STAINLESS STEEL, PERIMETER RECIRCULATION SYSTEM, #3 FINISH	NATARE	NATARE	A/1.2
2	234-2"	PVC T-BAR GUTTER GRATING, PARALLEL, WHITE, WITH REQUIRED HOLD DOWNS AND FASTENERS	NATARE	NATARE	A, C/1.2
3	234-2"	12 GA. TYPE 316L STAINLESS STEEL GROUT TAB	NATARE	NATARE	A/1.2
4	10	STAINLESS STEEL RECESSED ROPE HOOK	NATARE	NATARE	A/1.4
5	1	12 GA. TYPE 316L STAINLESS STEEL SUPPLY CONVERTER BOX WITH 6" FLANGED CONNECTION	NATARE	NATARE	A/1.3
6	1	12 GA. TYPE 316L STAINLESS STEEL GUTTER COLLECTOR BOX WITH 6" FLANGED CONNECTION	NATARE </td <td>NATARE</td> <td>B/1.3</td>	NATARE	B/1.3
7	75	10 GA. TYPE 316L GUTTER BASE ANGLES	NATARE	NATARE	A/1.2
8	150	1/2" ZINC-PLATED DROP-IN ANCHORS	NATARE	OTHERS	A/1.2
9	150	1/2-13 x 5" L6, THREADED STUD, ZINC-PLATED	NATARE	NATARE	A/1.2
10	300	1/2-13 HEX NUT, ZINC-PLATED	NATARE	NATARE	A/1.2
11	2	WATER SURFACE AGITATOR, WITH MANUAL CONTROL VALVE	NATARE	NATARE	B/1.4

MAIN POOL DESIGN DATA	
VALUE	IMPERIAL
LENGTH	75'-1"
WIDTH	42'-0"
WATER SURFACE AREA	3,046 FT ²
PERIMETER	234'-2"
VOLUME	156,955 GALLONS
RECIRCULATION SYSTEM	
VALUE	IMPERIAL
TURNOVER RATE	8 TFS
RECIRCULATION RATE	465 GPM
NUMBER OF INLETS	75 @ 6 GPM EA.



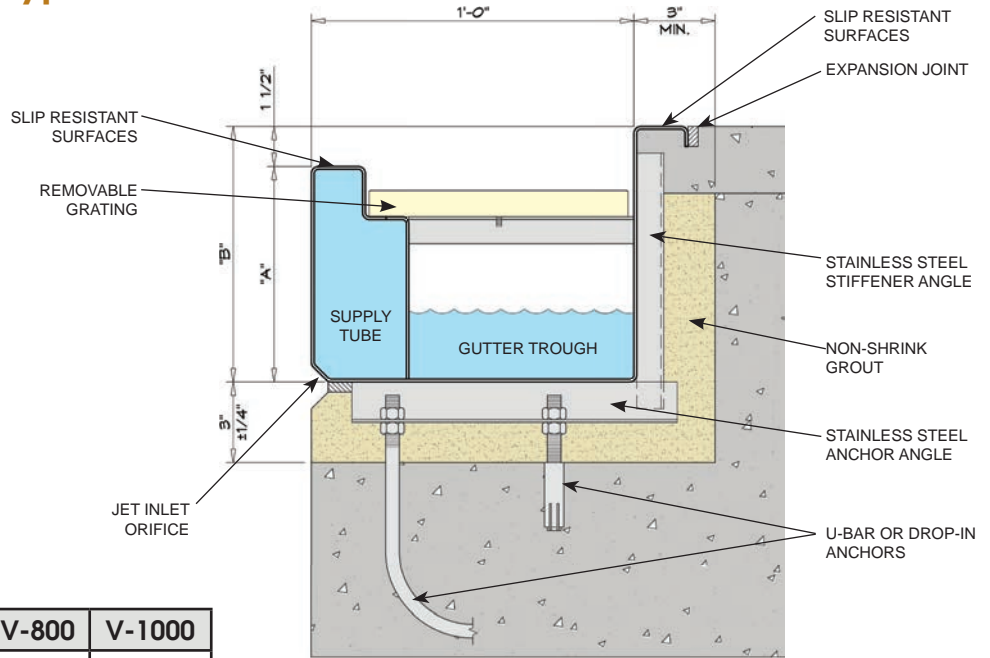
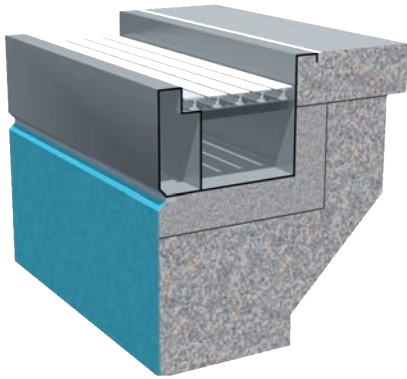
POOL PLAN VIEW



V-SERIES 800, ROLL OUT GUTTER SECTION

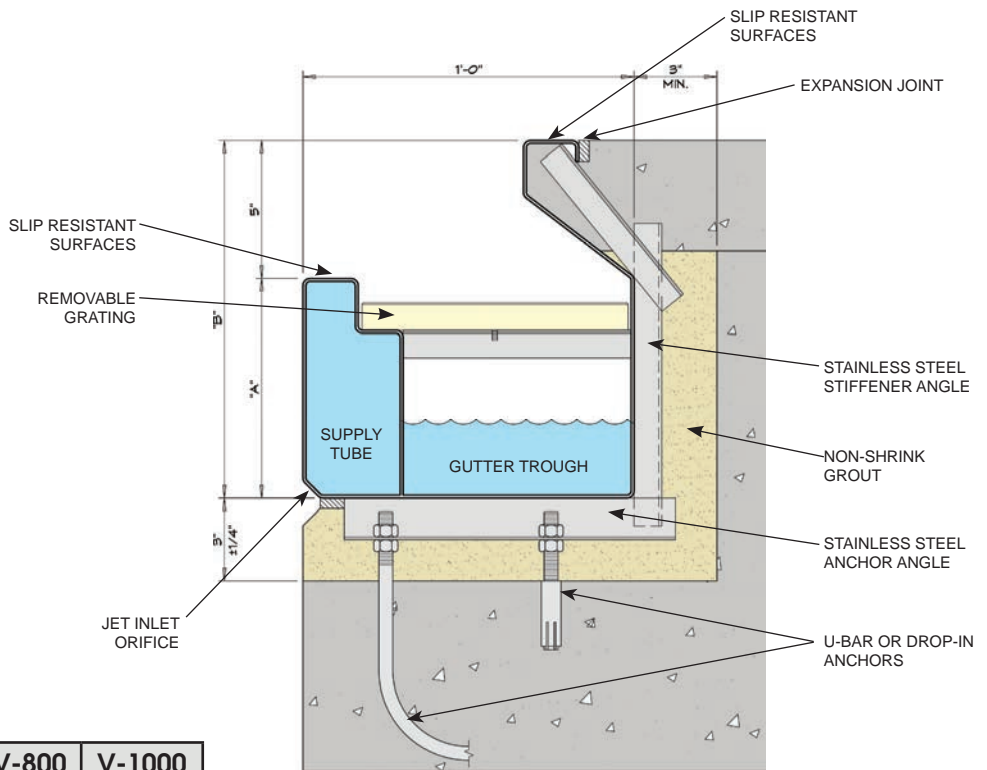
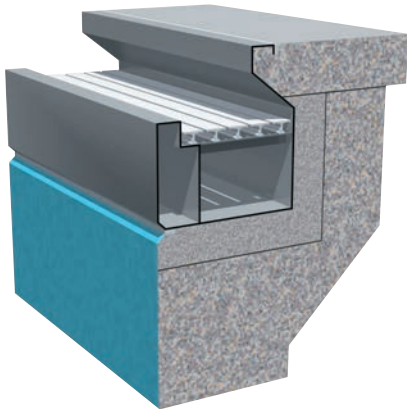


Perimeter V-Series Gutter Typical



Perimeter V-Series Roll-Out

Dimension	Description	V-600	V-800	V-1000
A	Gutter Face	6"	8"	10"
B	Gutter Height	7.5"	9.5"	11.5"

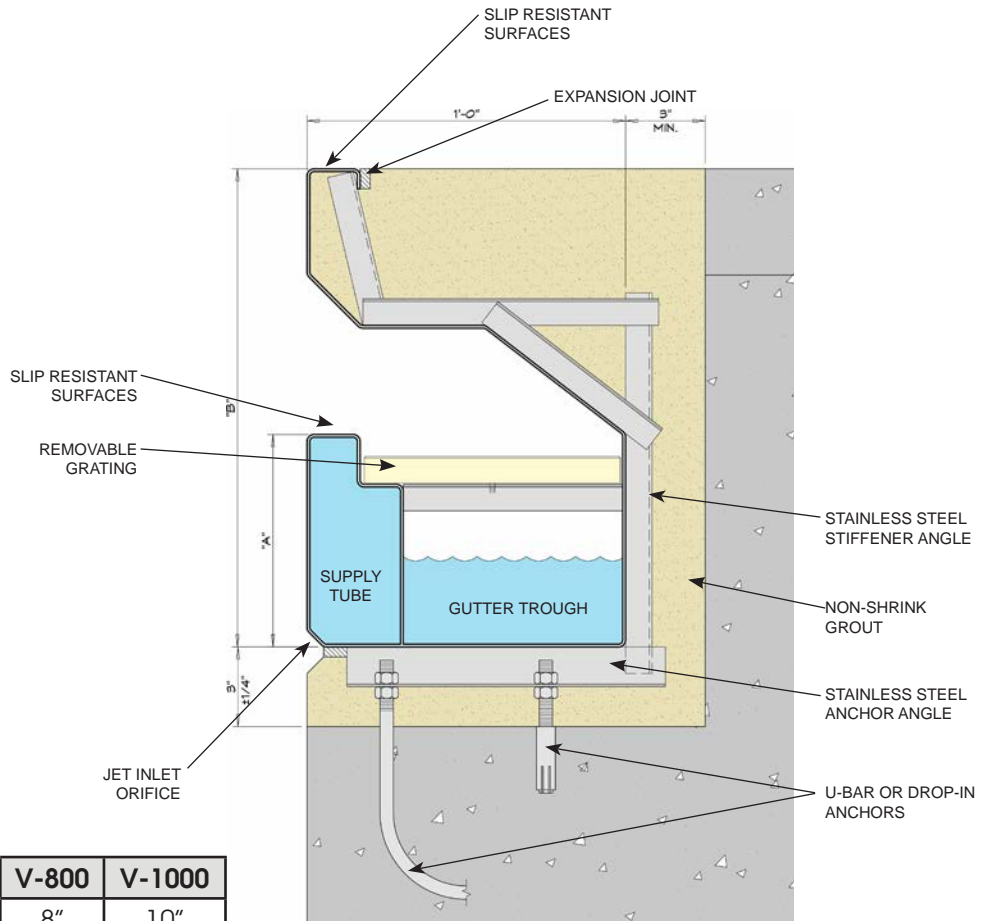
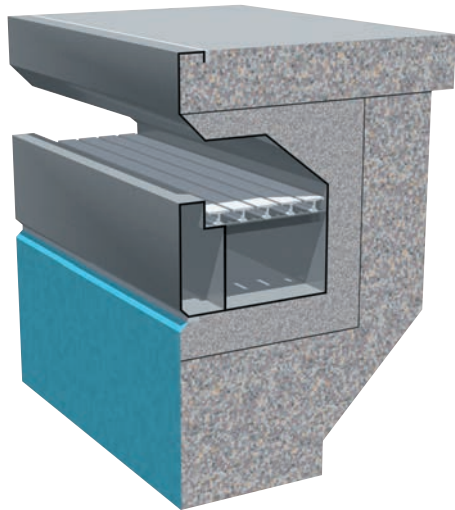


Perimeter V-Series Semi-Recessed

Dimension	Description	V-600	V-800	V-1000
A	Gutter Face	6"	8"	10"
B	Gutter Height	11"	13"	15"



Perimeter V-Series Gutter Typical

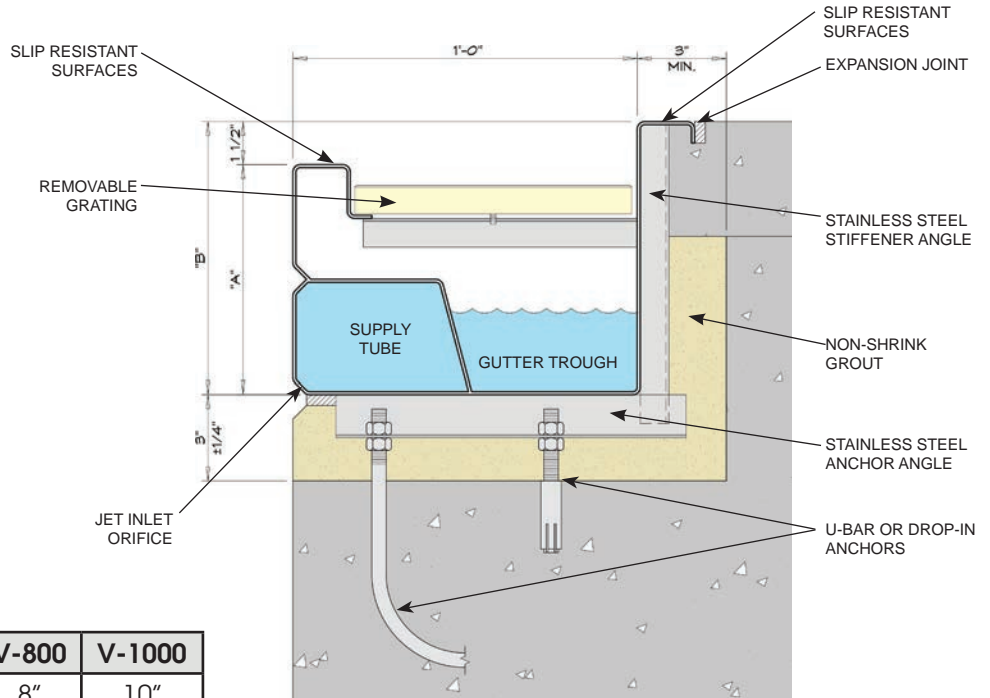
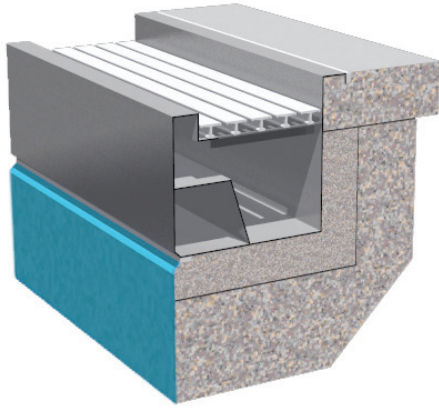


Dimension	Description	V-600	V-800	V-1000
A	Gutter Face	6"	8"	10"
B	Gutter Height	16"	18"	20"

Perimeter V-Series Fully Recessed

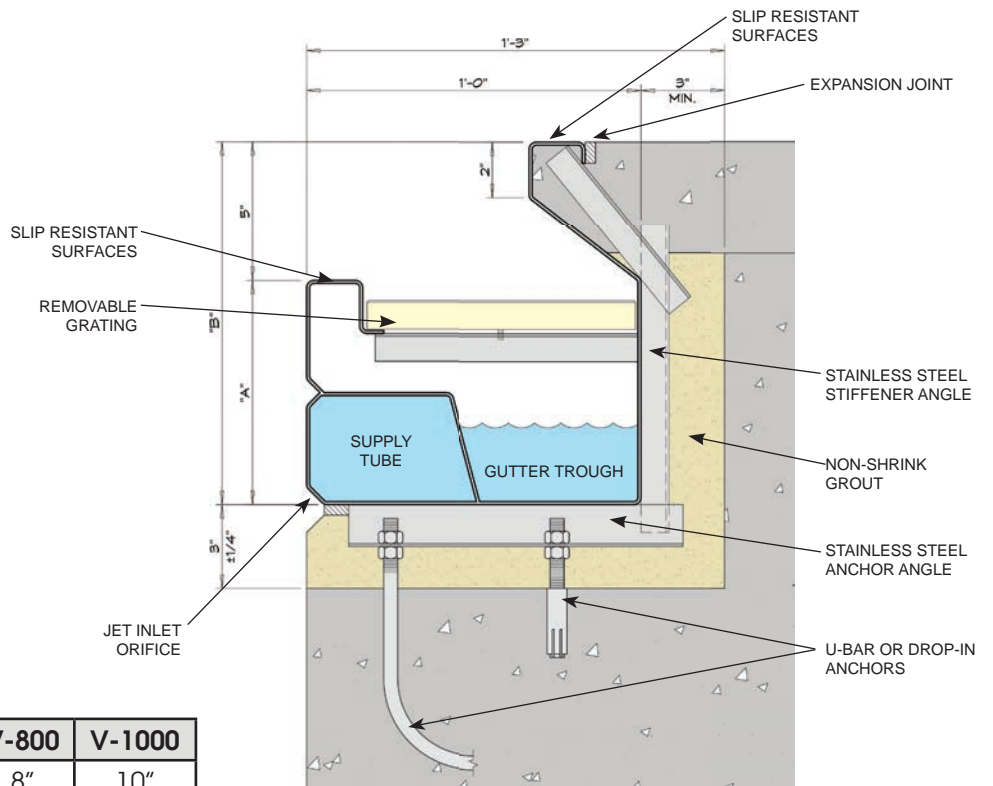
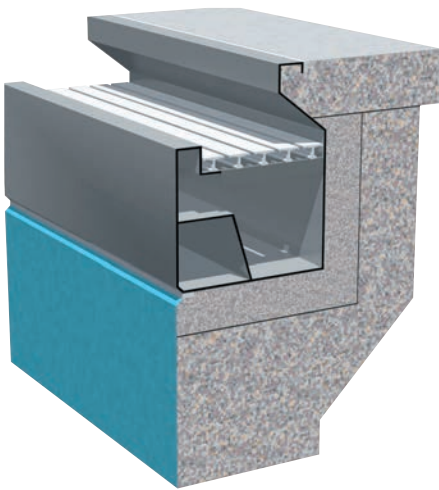


Perimeter MS-Series Gutter Typical



Dimension	Description	V-600	V-800	V-1000
A	Gutter Face	6"	8"	10"
B	Gutter Height	6.5"	9.5"	11.5"

Perimeter MS-Series Roll-Out



Dimension	Description	V-600	V-800	V-1000
A	Gutter Face	6"	8"	10"
B	Gutter Height	11"	13"	15"

Perimeter MS-Series Semi-Recessed



Perimeter Recirculation Systems Product Specification

The following pages include a typical specification (in the Construction Specification Institute format). This specification is intended to be used as part of a project or as a stand-alone specification for the purchase of a swimming pool, aquatic facility, or water feature item.

This specification is not proprietary or intended to limit competition. To the contrary, the purpose of this specification is to establish the minimum performance and quality standards. The use of this specification does not preclude other manufacturers or suppliers from bidding. In fact, the use of a comprehensive and detailed specification ensures that the purchaser or owner actually receives the expected quality and performance required.

Natare recommends that purchasers understand their needs, specify the item that meets their requirements, and demand that all potential suppliers meet those minimum requirements.

Please contact Natare for assistance in selecting and specifying your swimming pool, aquatic facility, or water feature items. Natare encourages the use of these specifications and permission for modification, reproduction, change, or distribution of these specifications is granted. These specifications are also available on request as word processing documents in most common file formats.

SECTION 13 11 43 - SWIMMING POOL PERIMETER GUTTER SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. The provision of the Notice to Bidders, Instructions to Bidders, Proposals, General Conditions, Supplementary Conditions, General Requirements, related Sections and other Divisions of these documents if used as part of this project are included as a part of this Section as though bound herein.

1.2 SUMMARY:

- A. It is the intent of this Specification to describe a swimming pool circulation system that consists of formed stainless steel components which anchor to a concrete wall. It shall be designed and fabricated in accordance with Stainless Steel Association Standards for building type structures as detailed in Designer Handbook Series, Committee of Stainless Steel. Specification includes, but is not limited to, the following components:
1. A return trough
 2. A Polymer Grating
 3. Collector and convertor boxes
 4. Anchors
 5. Optional components
- B. Refer to Section 2.3, for alternates that may affect the work in this Section.
- C. This Specification describes the stainless steel perimeter overflow recirculation system as illustrated by the drawings. Should the requirements of this specification contradict any other section of the project specifications, this section shall govern.
- D. Where items of the architectural, mechanical, or electrical general conditions, special conditions, and specifications are repeated in this Section of the Specifications, it is intended to call particular attention or qualify these items. It is not intended that any other parts of the documents shall be assumed to be omitted if not repeated herein.
- E. The method of water circulation specified and shown on the detailed drawings is intended as the basis for receiving bids and is the preference of the Owners. It is not the intent of these Specifications to, in any way, limit competition, or restrict the bidder in the preparation of his bid. It is assumed that unless otherwise stated, the bidder is offering the equipment in literal compliance with these



Specifications.

1. Requests for the use of substitute system(s) may be submitted to the Architect/Engineer for approval a minimum of ten (10) days prior to the bid opening date. Such requests must include a full equipment list of all items to be supplied, showing filter tank, perimeter system, automatic features, and other pertinent data as outlined in the Specifications. Complete hydraulic calculations, that establish the hydraulic capabilities of the system and are certified by a licensed professional engineer, shall be submitted for approval. Each submission shall include evidence of approval from the local or governing health authorities to be considered.
2. All requests for substitution must include a listing of no less than ten (ten) perimeter systems of similar size that have been in operation for a minimum of three (3) years. The listing must include the size and type of system and the name, address and telephone number of the principal contact for the facility.
3. **In the event an alternate system is approved, all contractors will be so advised per addendum prior to bid opening, allowing everyone to include such a system or equipment in their bid.**

1.3 DEFINITIONS:

- A. References Standards: Certain applicable reference standards are incorporated herein to the extent such references are relevant, with the latest revision applicable including, but not limited to:
 1. Fabrication standards:
 - a. AISI - American Iron and Steel Institute
 - b. ANSI - American National Standards Institute
 - c. AWS - American Welding Society
 - d. ASTM - American Society for Testing Materials
 2. The following are utilized as applicable:
 - a. NCAA - National Collegiate Athletic Association
 - b. FINA - Federation Internationale de Natation Amateur
 - c. USS - United States Swimming Incorporated

The intent of these Specifications is not to establish specific quantities, amounts, or dimensions. Thus, the reference to “one”, “each”, “an”, “a”, or like wording is for semantic purposes only. Unless specifically stipulated otherwise, provide materials, equipment, and items as detailed on the drawings or as reasonably required for complete, operational pool(s)

1.4 SYSTEM PERFORMANCE REQUIREMENTS:

- A. System Description: The system hereinafter specified consists of a complete stainless steel perimeter recirculating system of the type and configuration detailed on the drawings, including all necessary equipment within this specification. Upon completion, the system shall have no opening that could constitute a tripping or entrapment hazard.

1.5 SUBSTITUTIONS:

- A. The perimeter gutter system has been the subject of a detailed investigation and the design and operation of adjoining equipment and system is based upon the specified equipment. All base bids shall include only that equipment and systems listed herein or subsequently approved by addendum. The Owner reserves the right to reject any and all substitutions without cause and for any reason whatsoever, and the contractor is obligated to provide only the products, equipment, or systems as described by the specified manufacturer.

1.6 TRADE NAMES:

- A. When a particular manufacturer’s product, system, or brand name is designated in the project documents, either in the drawings, specifications or addenda thereto, only such designated products or systems by the named manufacturer may be provided.
 1. When reference is made in the project documents to trade names, brand names or the products of a particular manufacturer, such references are made solely to indicate what products or systems may be furnished under the base bid and are not intended to restrict competition. Should any bidder desire to use products, systems or trade or brand names that are different



from those mentioned in the project documents, application for the approval of such different products, systems or trade or brand names must be provided to the Architect in writing a minimum of 10 days prior to the date set for the opening of bids.

2. The burden of proving acceptability rests with the applicant and any application for approval must be accompanied with adequate and sufficient technical data, drawings, and details to establish clearly and convincingly beyond all doubt that the proposed product or system meets or exceeds all express requirements of the project documents.
3. Unless requests for approval of other products, systems or trade names or brand names have been received and approvals have been published by addendum, only such designated products or systems by the named manufacturer may be provided.

1.7 SEQUENCING AND SCHEDULING:

- A. Coordinate all work activities and installation of the perimeter gutter system with other building components.
- B. Arrange for and provide openings in building structure during progress of construction to allow for perimeter gutter system installation.
- C. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete, gunite, shotcrete and other structural components, as they are constructed or as necessary.

1.8 DRAWINGS:

- A. The drawings are generally diagrammatic and are intended to convey the scope of work and indicate general arrangement. The drawings are intended for contractors having experience, skill, and discretion in the execution of the work implied by the drawings.
- B. If directed by the Consultant, the contractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work. Under no circumstances shall any sizes be decreased or increased or radical changes in any part of the installation be made without the written consent of the Consultant.

1.9 SUBMITTALS:

- A. Upon notice to proceed under this Contract, installation details and submittal documents will be provided fully illustrating the materials and procedures to be utilized. These details and submittal documents, once accepted by the Owner or Owner's Representative, shall be the basis for the fabrication, installation, and inspection of the installation.
- B. Product Data: Submit manufacturer's technical information and product data including basic materials, analysis, and installation instructions for the perimeter gutter system including, the following:
 1. List each material finish and application, cross-reference to the shop drawing, and identify by manufacturer's name.
 2. Provide certified dimensional shop drawing showing all pertinent dimensions in plan, section, and elevation.
 3. Submit a schedule of manufacturer's certified test reports showing compliance with requirements of Performance Criteria.
 4. Provide detailed hydraulic calculations establishing and verifying the flow rates, operating pressures, and hydraulic performance of the perimeter gutter system
- C. Program and Procedures: Prepare a comprehensive summary of the installation program, which involves scheduling, preparation and installation procedures, quality control, and project close-out. Submit to architect for approval.
- D. Submit manufacturer's written recommendations for scheduling of maintenance, installation, and inspection procedures. Include recommendations for corrective action of typical situations that may be encountered.
 1. Submit comprehensive operations and maintenance manuals covering all aspects of operating and maintaining the perimeter gutter system.
- E. Maintenance Instructions and Maintenance Program: The Manufacturer shall provide complete descriptive information detailing proper care, maintenance and cleaning of the system.

1.10 QUALITY ASSURANCE:

- A. The swimming pool perimeter system shall be the product of a Manufacturer having at least 10 (10) years' experience in the fabrication of stainless steel swimming pool systems and at least 10 (10) installations of similar projects currently in satisfactory



operation. Swimming pool systems shall be in compliance with the code requirements that govern in the State of the installation.

1. In the event an alternate manufacturer's system is approved, all contractors will be so advised per addendum prior to bid opening to allow for inclusion of such a system or equipment in their bids. In the absence of approval for an alternate manufacturer, only the specified manufacturer's system may be incorporated in the project.

2. Listing or subsequent approval of a particular manufacturer as an approved manufacturer does not constitute acceptance of the manufacturer's standard configuration, materials, or equipment, except as they specifically meet or can be made to conform to the requirements defined in this specification. Any bid shall be assumed to include any and all costs to change, modify, or otherwise comply fully with the requirements of this specification. Claims for additional compensation to comply with these specifications after bid for any reason whatsoever will not be considered. Only materials, equipment, or systems that absolutely comply with these specifications in all regards will be accepted. Any substitute systems from alternate manufacturers shall be in compliance with all requirements of these Specifications.

B. Warranty: The perimeter gutter system shall be guaranteed by the Manufacturer for workmanship, materials, and performance for a period of five (5) years. This warranty shall not include or cover abusive or improper treatment to the perimeter gutter system by others either during construction or when operational.

1. A sample copy of the warranty statement must be provided for approval and shall be in accordance with these specifications.

1.11 EXTRA MATERIALS:

A. Furnish all required materials for the complete installation of the perimeter gutter systems.

1.12 DELIVERY, STORAGE AND HANDLING:

A. The perimeter gutter system shall be delivered to the job site in shop-fabricated sections adequately packaged to prevent damage. Unloading and storage shall be executed by the Contractor. The materials shall not be stacked or stored in any manner which could cause damage or deform the materials. Site assembly or fabrication of any part of the perimeter gutter system structure without the complete coordination and supervision of the manufacturer is strictly prohibited.

1.13 PROJECT SITE CONDITIONS:

A. The project site shall be in accordance with the Manufacturers' technical bulletins. Access for the installation of the perimeter gutter systems will be provided by others.

1.14 COORDINATION:

A. The manufacturer shall provide complete descriptive information detailing the design, construction, and installation. The contractor shall include all costs for coordinating visits to the project site to coordinate various aspects of design, construction, and installation. Coordination shall include the cost for aspects of the installation and to coordinate manufacturing, testing, and commissioning programs with the main contractor(s), timing system, and other suppliers. Such visits shall take place immediately upon notice to proceed to enable all contractors to be briefed, and a complete production and installation program to be established.

1.15 DIMENSIONAL TOLERANCES:

A. The vertical sides of the perimeter gutter system must be uniform in plane without unanticipated projections or sudden changes of more than 2 mm (.079 inch). No part of the perimeter gutter system shall exceed 5 mm (3/16 inch) from the perfect vertical plane. When the perimeter gutter system is in position in the pool with lane ropes connected and tensioned, the perimeter gutter system sides shall provide a vertical plane surface that is uniform to within the specified tolerance.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Manufacturers: Natare Corporation, Indianapolis, Indiana. All bids shall include only equipment from this manufacturer.



- B. The system specified and shown on the drawings is the product of a manufacturer with at least 10 years experience in the construction of custom fabricated perimeter gutter systems and with at least 10 perimeter gutter systems of comparable weight, size and design in service for at least 5 years. The perimeter gutter system shall be constructed to the dimensions shown in the Project Documents (subject to site conditions, course and design requirements)
- C. Source Limitations: All perimeter gutter system components shall be provided through one source and from a single manufacturer.

2.2 MATERIALS:

- A. All materials are to be compatible with the swimming pool environment. Carbon steel, aluminum, magnesium, wood, and fiberglass are not acceptable. Mill Certifications and documentation of stainless steel grade, finish, and carbon content are to be provided to the Engineer for approval prior to fabrication.
 - 1. All stainless steel shall be low carbon (carbon-controlled to no greater than .03% carbon) AISI Type 304 [316L] stainless steel that includes molybdenum and nitrogen in the chemical composition (as verified by mill certificates).

2.3 FUNCTIONAL DESCRIPTION OF SYSTEM:

- A. The perimeter gutter system shall include a stainless steel gutter channel: The gutter trough shall be formed to the dimensions and configuration detailed on the drawings. The shop-fabricated sections shall be delivered to the job site for field installation. The gutter shall contain adequate cross-sectional area as indicated to ensure smooth, unimpeded water flow. PVC piping shall not be utilized for any function within the gutter trough.
- B. A continuous handhold shall be incorporated at the water level of the pool on the perimeter gutter system in accordance with the appropriate sections of applicable swimming pool code.
- C. The supply conduit shall be of the size and configuration detailed on the drawings. Engineered jet inlet orifice nozzles providing openings no greater than .31" in. (8-mm) diameter shall be permanently installed in the gutter at the appropriate locations as indicated on the drawings and selectively spaced continuously around the pool perimeter to provide balanced water distribution throughout all areas of the pool. Drilled holes in the gutter tube are not acceptable, and nylon or plastic inserts are not to be used. The orifices shall project downward at a 45-degree angle to ensure optimum distribution of the filtered water. There shall be at least one orifice for every six (6) gpm (1.36-m³/hour) of the circulation rate. Supply conduits formed from PVC pipe will not be acceptable. All horizontal welds must be accessible for inspection and repair
- D. Slip-resistance: All horizontal surfaces of the stainless steel perimeter gutter system shall incorporate an integral treatment consisting of a series of uniform upward protrusions extending outwardly from the flat horizontal surface of the stainless steel spaced apart from one another by a distance, which produces a slip-resistant surface. Such slip-resistant treatment must be permanent and may not include the use of any abrasive process, which changes the appearance or corrosion resistance of the stainless steel. The slip-resistant surface shall be certified to comply with the requirements of ASTM C1028 and F-1637-95.
 - 1. **Aggregate or sand blasting, grinding, or other abrasive treatments specifically are not to be used. All leading edges of this material shall be chamfered, smooth, and acceptable for skin contact.**
 - 2. One slip-resistant process meeting these requirements is NataTread slip-resistant treatment, furnished by Natare Corporation of Indianapolis, IN. This process may be the subject of patents pending or issued.
- E. Gutter Channel Grating: Water entering the perimeter gutter shall be directed over an energy dissipating diffuser grating with constant orifices, which shall completely cover the gutter channel bed to assure optimum distribution of incoming water and prevent excessive turbulence or rebound to the pool. No cyclac or fiberglass grates or screens of any kind will be acceptable. Molded gratings may not be used.
 - 1. Acceptable products: Natare GPM Polymer Grating System, Natare Corporation, 5905 W. 74th, Indianapolis, IN 46278 USA in the shape and configuration as illustrated by the drawings or described herein is the preference of the Owner and is intended as the basis for receiving bids. Cyclac, ABS, fiberglass or molded plastic or PVC grating of any kind will not be acceptable. There are no known substitutes for this grating system, and no substitutions are allowed.
 - 2. Grating systems shall be oriented to provide openings that are either parallel or perpendicular to the edge of the gutter in the configuration as shown on the drawings. The top surface shall consist of integral slots alternating with slip-resistant bearing surfaces.



3. Grating systems utilizing applied slip-resistant grit, sand, paint, or coatings are not acceptable. The grating shall provide a permanently slip-resistant surface and shall have the capacity to sustain a uniform load of 100 pounds per square foot (488-kg/m²). It shall be attached to the gutter system by means of a tamper-proof non-corrosive anchoring system to prevent vandalism or removal without the use of special tools. The grating shall provide no less than 30% open area to ensure adequate circulation of the pool water into the gutter. Grating openings shall conform to the requirements of the DIN standard for such openings.
 4. The polymer grating shall meet or exceed the following physical properties:

a. Density (g/cc)	955 g/cc	ASTM D1505
b. Tensile Strength yield (PSI):	4100-psi	ASTM D638
c. Flexural Modulus (PSI):	200,000-psi.	ASTM D790
d. Elongation @ Break (%)	>600%	ASTM D638
e. Tensile Impact (ft.lbs/in ²)	115 ft.lbs/in ²	ASTM d1822
f. Durometer (shore D)	68	ASTM D2240
g. Water Absorption (7-day):	.05%	ASTM D570
h. Heat Deflection Temp @ 66-psi (°C)	75°C	ASTM D648
i. Vicat Softening Temp. (°C)	123°C	ASTM D1525
j. Co-efficient of expansion (in./in./°F)	6x10 ⁻⁵	ASTM D696
 5. The grating shall be a high density stabilized polymer grating that shall never require refinishing. The grating shall be machined from a solid block of material, and no fasteners, adhesives, joining or other assembly methods shall be used to fabricate or assemble the grating sections. The grating shall be colorfast and easy to clean with a permanent integral slip-resistant surface, providing no greater than .315-inch (8-mm) opening and shall have a minimum cross-sectional thickness of 1-in. (25.4-mm) or 7/8-inch (19-mm) as shown on the drawings or specified herein.
 6. The grating must be guaranteed **by the manufacturer for fifteen (15) years** not to crack, flake, separate, rot, swell, break, splinter, discolor, or delaminate, regardless of pool water chemistry. Repeated blows from a heavy hammer shall not cause the grating to crack, chip, or shatter. Should any such deterioration occur during the guarantee period, the grating is to be replaced without cost to the Owner.
 7. Grating shall be made entirely from FDA- and USDA-approved materials. Color to be permanent white or as selected by Owner or Consultant from eight standard colors. Grating samples shall be provided to the Consultant or client and approved prior to final production.
 8. The top surface of the grating shall be a permanent bi-directional slip-resistant surface consisting of integrally machined groves and shall have cross groves running perpendicular to the grating orientation. The grating shall be certified as slip-resistant, non-hazardous walk surface under ASTM 1028 and shall have the capacity to sustain a uniform load of 100 pounds per square foot (488-kg/m²). Gratings that do not provide a bi-directional, slip-resistant surface are acceptable.
 9. Hold-downs and fasteners shall be constructed entirely from PVC or stainless steel and be incorporated into the system so as to prevent tampering or removal without the use of special tools.
 10. **(Optional)** Depth, informational or logo markings: Provide permanent contrasting color depth, information or logo markings machined from the same material as the grating and made an integral permanent part of structure of the grating in the type, quantity, shape and size as indicated or referenced on the drawings.
- F. Stainless Steel Collector and Converter Boxes: Stainless steel supply converter box(es) and gutter collector box(es) shall be provided in the quantities and at the locations as shown on the drawings or as required to maintain proper hydraulic performance. Each supply converter box or collector shall be provided with a stainless steel flanged connection in the appropriate size for the interconnecting piping. No couplings, carbon steel or mild steel flanges shall be used.
1. Gutter return converter boxes shall be designed to boost velocity through the gutter outlet using a tangential flow velocity accelerator. After installation, the collector boxes shall be fully encapsulated in concrete by the Contractor.
- G. Anchors: The Perimeter System Manufacturer shall provide forged "U" shaped coated steel threaded anchors to be installed in the pool wall. The anchors shall be installed at the elevation indicated on the gutter detail and shall be located at a maximum of 4 feet (1.2-m) on center. The anchor system shall be fully adjustable in all directions and have vertical adjustability without field



modification. “Drop-in” anchors shall be acceptable when provided to the Contractor for their installation. Anchors formed from bent reinforcing steel (rebar) may not be used.

- H. Accessories: Furnish and install the following optional accessories in the in the quantities and at the locations as shown on the drawings or as required for proper function or use...
1. **(Optional)** Recessed Rope Hooks: Rope hooks shall be provided as indicated on the drawings, and shall consist of a stainless steel cylinder with a stainless steel cross-tie bar recessed into the vertical gutter face. Each rope hook shall have an inside diameter of at least 1”. Holes drilled for the rope hooks into any part of the gutter surface are not acceptable.
 2. (Optional) Jet Wash Fittings: Jet wash fittings shall be supplied at the locations indicated on the plans and shall attach to the gutter in the manner detailed.
 3. **(Optional)** Flow Proportioning Surface Skimmers (for in-pool surge control): Provide automatic flow compensating skimming weirs as detailed on the prints that shall be capable of skimming the surface around the pool perimeter. Weirs shall be located within the gutter face, below the lip of the perimeter system at the normal operating level to allow for ample in-pool surge as the bather load increases.
 - a. The weirs shall be equipped with an internal, fully automatic surge control device, which operates on hydrostatic principles. Weirs shall act independently; responding to surge conditions at each location and shall incorporate an automatically adjusting hydrostatic gate to ensure immediate reaction to water level changes within the pool.
 - b. Each weir shall be capable of skimming 50 gpm, and there shall be enough weirs to continuously skim the required percentage of the total circulation rate. Surge capacity within the pool at a skimming rate of 50 gpm per skimmer shall be (one) 1 gallon per square foot. Flow through the weirs shall be restricted as the pool water surface is brought to rim flow elevation. This action shall occur by means of an integral control device acting perpendicular to the water flow gradient.
 - c. For safety reasons, other than the 3/8” supply orifices, no opening in the face of the gutter wider than 3/8” shall be allowed. The weir shall be constructed in such a manner that all moving internal parts are immediately accessible and removable once the back cover plate is removed. Weirs or devices that respond to gutter return trough levels are not acceptable.
 4. **(Optional)** Stainless Steel Rope Hooks: Rope hooks shall be provided at locations shown on the drawings, and shall be made of 3/8” diameter stainless steel rod. The rods will be welded to the gutter and extend back into the concrete pour for secure attachment. Holes located in the stainless steel handhold shall not be considered equal.
 5. **(Optional)** Targets and markings: The perimeter gutter system shall have swimming lane racing targets located as required and shall conform to the applicable rules as designated by United States Swimming Inc. (USS), National Collegiate Athletic Association (NCAA) or the Federation Internationale de Natation Amateur (FINA) as designated by the Architect. The targets shall consist of a permanent black slip-resistant PVC material that shall be incorporated into the surface at the specified locations. Paints or coating systems shall not be used for target markings.
 - a. Provide all required markings and anchors in the grating and on the vertical face of the perimeter gutter system to accommodate the water polo course(s) as shown on the drawings
 6. **(Optional)** Equipment Anchors: The walkway of the perimeter gutter system shall be equipped with connections and enclosure caps for water polo goals, stanchion posts and starting block anchors as noted and shown on the drawings to accommodate the chosen equipment to be utilized. Escutcheons and closure caps shall be provided for all penetrations.
 7. **(Optional)** Integral Deck Drain System: An integral perimeter deck drain channel shall be provided at the rear of the gutter channel in the dimensions as shown on the drawings. Deck drain channels shall be easily accessible and covered with a polymer grating system in accordance with the grating section of this specification. Provide deck drain convertors in the form of threaded FIP stainless steel couplings or stainless steel flanged connections in the quantity and locations as indicated on the drawings.

2.4 FABRICATION:

- A. The perimeter gutter system shall be completely shop-fabricated in appropriate length sections. Field fabrication is not acceptable.
1. The perimeter gutter system shall be fabricated in strict accordance with the Manufacturers’ procedures in conformance with the criteria of the American Welding Society. All welding shall be performed in accordance with the procedures established by



the American Welding Society, and those of the Manufacturer. All spatter, burns, and discoloration must be removed. Welds shall be cleaned and made non-corrosive.

2. The grain finish on the stainless steel handholds shall be parallel with the water's surface.

2.5 SOURCE QUALITY CONTROL:

- A. The entire system shall be inspected prior to shipment to verify compliance with the fabrication drawings and quality of workmanship.

PART 3 - EXECUTION:

3.1 EXAMINATION:

- A. Prior to the installation of the perimeter gutter system, the manufacturer shall submit a full set of submittal and installation drawings that show all the features of the system construction and indicating proper sizing and locations along with complete dimensional details and operating manuals.
- B. The supervising representative or installer shall verify that the site conditions are in accordance with the Manufacturers' requirements, shop drawings, and/or technical bulletins.

3.2 PREPARATION:

- A. Appropriate anchors shall be furnished for installation by the Contractor, to be located on approximately four (4) ft. centers as detailed on the submittal drawing. This shall be completed prior to the Installer's arrival to the job site.

3.3 ERECTION, INSTALLATION & APPLICATION:

- A. All installation is to be performed by skilled technicians (welders with at least five (5) years experience in field welding stainless steel recirculating systems). If requested, the Contractor shall submit the Installer's experience in writing to the Architect for approval prior to ordering the recirculating system. All work is to be performed in accordance with Manufacturer's technical bulletins. Should the requirements of these bulletins contradict this or any other section of the Specifications, the procedures called for in the bulletins shall govern. The work under this section shall be performed by, or directed by, an authorized licensee of the Equipment Manufacturer so that the complete system will operate in accordance with the intent of the Specifications.
- B. All welding shall be performed in accordance with the procedures established by the American Standards Association, and those of the Manufacturer. All exposed welds shall be smooth and uniform with minimum irregularities. All spatter, burns, and discoloration must be removed. Welds shall be cleaned. Interior welds, when allowed, made on the underside of an exposed surface must be completed so that there is no noticeable discoloration, burn-through, or deformation on the exposed face. Exposed raised welds on the gutter face are not acceptable.
 1. All welding shall be completed by skilled and experienced welders in strict accordance with the requirements of **AWS D1.6 Structural Stainless Steel Welding Code** utilizing pre-qualified WELDING PROCEDURE SPECIFICATIONS (WPS). Welders shall be certified in all positions.
 2. All evidence of heat-tint, oxide, or welding process by-products shall be removed, and the weld shall be uniform, clean and smooth, free of crevices, pitting or inclusions. Stainless steel wire brushing shall be used only for preliminary cleaning. Visible signs of welding product shall be removed, and the surface of the material immediately adjacent to the weld shall be blended through polishing to closely approximate the original finish
 3. The installing contractor shall provide welding samples consisting of welding coupons or weldments illustrating each type of weld to be used in the installation of the perimeter gutter. All welds shall be cleaned and finished to the standard as established herein. Once accepted by the Architect, the sample shall be the standard by which all similar welds in the bulkhead shall be judged.
- A. The stainless steel perimeter system shall be attached to the anchors in the manner shown on the drawings. These sections shall be welded to the anchors to form a continuous, smooth, strong, leak-proof unit. All welds shall be as described herein
- B. The entire system is to be installed level, true, plumb, and square to the dimensions noted on the drawings. It shall incorporate the



following tolerances:

- 1. Vertical (gutter lip): + 1/8”.**
- 2. Horizontal: + 1/4” from the vertical plane of the pool end-wall.**

3.4 FIELD QUALITY CONTROL:

- A. Upon completion of gutter installation, the supply tube shall be pressure tested (before the jet inlets have been drilled). The supply tube shall be pressurized at no more than 5 psi, which shall then be maintained for a period of 4 hours without a significant drop in pressure. During the 4-hour period, all joints shall be soap tested. Pressure testing shall be done by the system installer.
- B. For field-assembled perimeter systems, upon completion of the pressure test, .315 (8-mm) stainless steel orifice nozzles shall be installed around the perimeter of the pool as detailed on the drawings.

3.5 GROUTING AND FINISHING:

- A. After the stainless steel recirculating system has been installed on the pool wall, cleaned and pressure tested, the Contractor shall place an appropriate mixture of non-shrink concrete grout completely filling the spaces between the stainless steel gutter system and any surrounding concrete structure. It shall be placed to provide a watertight seal between any existing concrete structures and to permanently secure the gutter in the structure. Coordinate grout design and placement as required for the stainless steel gutter design, surrounding concrete structure and interior pool finishes.
- B. When placing the grout, form the face of the grout on a 45-degree bevel from the pool wall to the bottom of the 45-degree angle on the lower edge of the gutter. At the point of contact with the gutter, an appropriate groove or reglet must be formed as required by the elastomeric sealant to be used. Install an appropriate elastic sealant, such as: Sika Corporation's "Sikaflex", 3M's "Weatherban", Goodyear's "Permanent Sealer", or any equal sealer to insure a water resistant joint. Install sealant in strict accordance with sealant manufacturer's instructions.
- C. Form an expansion joint between the pool deck and perimeter system. The joint shall be filled with an appropriate elastic sealant to insure a water resistant joint. Install sealant in strict accordance with sealant Manufacturer's instructions.

3.6 ADJUSTING & CLEANING:

- A. Immediately following pressure testing, the system shall be cleaned and passivated by an approved cleaning and passivation process in strict accordance with the Manufacturer's instructions.

3.7 DEMONSTRATION AND COMMISSIONING:

- A. The Manufacturer or his representative shall supply the services of a competent and experienced field engineer to inspect the completed installation, make final adjustments, place the system in operation, and give operating instructions relative to its care and use.
- B. Start-up and Operator Training: A qualified representative of the perimeter gutter system Manufacturer shall visit the jobsite after the installation of the perimeter gutter system is complete to inspect the completed installation, make final adjustments, place the system in operation, and give operating instructions relative to its care and use.



Sample Statement of Warranty

Natare® Perimeter Gutter Systems

NATARE CORPORATION (“Natare”) hereby provides exclusively to the original Owner the warranties contained herein (“Warranty”), related to the Natare Perimeter Gutter Recirculation System, (“Gutter”) provided by Natare for a project (“Project”), and it is expressly understood and acknowledged by Natare and the Owner that the Project and this Statement of Warranty relate solely to a commercial transaction.

Natare expressly WARRANTS that the Gutter is comprised of new materials, which were manufactured in a workmanlike manner in accordance with Natare drawings, submittals, specifications, and technical details. Natare further expressly warrants that the Gutter, if installed and utilized in accordance with Natare’s written instructions, industry standards and proper practice and recommended Pool and Spa Water Chemistry Standards, will perform in a proper and workmanlike manner under normal and intended use and service for a period of one (1) year beginning on the Effective Date of Warranty as written below.

Natare further expressly WARRANTS that, commencing upon the delivery of the Gutter to the Owner, the Gutter shall be free from defects in materials and workmanship for a period of ten (10)-years and the stainless steel supporting structure for a period of fifteen (15)-years.

The warranty described herein is provided solely with regard to a Gutter purchased from Natare that were undamaged prior to delivery, installation, or first use. In the event that the Gutter’s materials or workmanship shall be found to be to be defective during the specific terms set forth in this Warranty, Natare agrees that it shall, as soon as practical after receipt of written notice from the Owner, and at its option, either repair or replace the defective part or parts of the Gutter, or refund to the Owner the portion of the purchase price attributable to the defective part or parts of the system. Any materials or equipment claimed to be defective must be returned to or inspected by Natare, and Natare shall have the sole right to determine coverage under this Warranty. This warranty covers solely the Gutter and does not include labor or installation costs for any items not originally provided and installed by Natare and does not cover inspection costs, regardless of whether this Warranty applies to the Owner’s claims made hereunder.

Specifically exempted from these warranties are claims arising from: normal wear and tear; undue wear and tear, damage or failure due to accident, misuse, abuse, neglect or other conditions exceeding normal use; improper or incorrect operation or maintenance; any use of the product other than the particular use for which the product was intended; structural or earth movements; or acts of God.

Natare further disclaims any and all implied warranties, including but not necessarily limited to the implied warranties of merchantability and fitness for a particular purpose.

In no event shall Natare be liable for any consequential or other damage, losses, or expenses whatsoever, direct or indirect arising in connection with the use or inability to use the Gutter for any purpose, except those provided herein. There are no other warranties or guaranties, expressed or implied, given by Natare or its agents except those provided herein. The express warranties described herein are provided solely to the original Owner of a Gutter purchased from Natare that was undamaged prior to installation. Goods or equipment not manufactured by Natare are covered only by the standard warranty of the manufacturer, though sold, provided, installed, or operated with Natare goods or equipment. The express warranties described herein are conditional upon payment in full to Natare for any and all charges related to the Gutter. Any claims against Natare arising out of or related to this Statement of Warranty must be made in detail and in writing and must be provided to Natare within ten (10) days of the date on which the warranty claim was discovered or reasonably should have been discovered. Any and all disputes, controversies or claims arising out of or related to this Warranty shall be settled by binding private arbitration, which arbitration shall be conducted in accordance with the American Arbitration Association Construction Arbitration Rules then in effect. The parties shall endeavor to mutually agree to an arbitrator who shall hear and decide the dispute. If the parties are unable to agree to an arbitrator, the arbitrator shall be selected through the American Arbitration Association. This Warranty shall be governed by, and interpreted, enforced and construed in accordance with the laws of the State of Indiana. The Owner hereby submits itself to both the subject matter and personal jurisdiction of the State of Indiana, and waives any objection thereto. The Owner agrees that any action brought under this Warranty shall be arbitrated in Marion County, Indiana. All Natare warranties and other duties with respect to material, equipment, systems, or services furnished by Natare shall be conclusively presumed to have been satisfied one day after the expiration of the warranty period as set forth herein. This Warranty supersedes any and all written or oral warranties, promises, or representations made by Natare regarding the Gutter.



Natare Corporation
5905 West 74th Street
Indianapolis, IN 46278
(317) 290-8828

EFFECTIVE DATE OF WARRANTY _____

SIGNED BY _____

Get Crystal Clear Water with a
Natare MicroFlo® Vacuum Sand Filter!



Natare Corporation

5905 West 74th Street | Indianapolis, IN 46278 | USA
(800) 336-8828 | (317) 290-8828 | FAX (317) 290-9998

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