

August 17, 2009

**JOC 2nd REVISION PROPOSAL FORM:**

Mr. Chris Kabala  
City of Tempe  
31 East 5th Street  
Tempe, Arizona 85281

RE: Kiwanis Park Wave Generation Equipment  
Vendor design assistance and equipment purchase

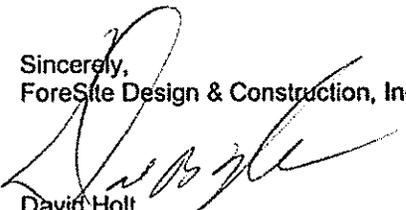
Dear Mr. Kabala,

ForeSite Design & Construction, Inc. proposes to purchase design phase assistance and the wave generation equipment for the replacement of the existing equipment located at the Kiwanis Park Recreation Center for the total sum of: *One Hundred Seventy-nine Thousand Eight Hundred Forty-nine and 00/100<sup>th</sup> Dollars (\$ 179,849.00)*

In submitting this proposal, we agree:

1. To hold the proposal open for thirty (30) days after the date of this proposal.
2. To accomplish the work in accordance with the JOC contract documents and the following project description, clarifications and exclusions listed below.

Sincerely,  
ForeSite Design & Construction, Inc.

  
David Holt  
Director of Preconstruction Services



## Project description:

The design proposal is for the purchase of design phase assistance from Murphy's Wave, Ltd. and the new wave generation equipment for the Kiwanis Park Recreation Center. The design phase will include the following:

### Design -

- Provide design assistance, equipment specifications and construction layout documents for the City of Tempe designer Water Technology, Inc. of the replacement equipment. The design documents will consist of the following:
  - Plant room layouts (all views)
  - Wave Chamber Details (all views)
  - Equipment Layout
  - Installation Drawings
  - Electrical Connections (available on manufacture of the wave machine)

### Equipment –

- The following list of equipment will be purchased and received:

2	Each	55Kw High performance wave fans
8	Each	Special Adaptor Plates in 316L Stainless Steel
8	Each	Wave Valves manufacture from high grade 316 Stainless Steel
8	Each	Pneumatic cylinders and solenoid drive assemblies
2	Set	Complete set of triple layer GRP / uPVC high pressure air duct
2	Sets	Flexible connections and fixings
1	Each	Main control panel
1	Each	Pool side remote panel with strobe light & warning horn
1	Set	ABS Air line with pressure regulator and auto drain system
1	Set	Stainless steel and galvanized duct supports
1	Set	Holding down bolts, supports, brackets & fixings
1	Set	Selected Spare Parts
8	Each	Adaptor plates at wave valve openings

## Clarifications and qualifications:

1. Our approach to this project is based on a continuous work flow. Once the project team develops a schedule and we mobilize to start work, work will continue without significant "stops". All owner provided scopes of work and owner provided material and equipment will be furnished timely based on the schedule.
2. Proposal anticipates the unloading of the purchased equipment at the Kiwanis Park Recreation Center. Equipment to be stored within the pool equipment area until installation can occur.
3. A \$10,000 allowance has been established for a direct drive blower system if desired by the City.

## Exclusions:

- Asbestos abatement or hazardous material removal
- Plan review and Building Permit fees
- Development fees & utility company charges
- Temporary utilities



**City of Tempe**  
**Job Order Price**

COT Project Name: **Kiwanis Park Recreation Building**

8/17/2009

COT Project Number: **Wave Generation Equipment Design assist & Purchase**

Price of Subcontractor(s)	\$149,500
Price of Subconsultant(s) (If applicable)	\$0
General Conditions	\$447
Preconstruction Labor (If applicable)	\$960
Construction Labor	\$631
<b>Subtotal</b>	<b>\$151,538</b>
Overhead and Profit ( 8 % )	\$14,388
<b>Total</b>	
Insurance (1.79%)	\$3,219
Bonds (0.95%)	\$1,709
Sales tax (5.265%)	\$8,995
<b>Combined Total</b>	<b>\$179,849</b>
<b>Contractor's Contingency</b>	<b>\$0</b>
<b>Owner's Contingency</b>	<b>\$0</b>



City of Tempe  
Kiwanis Park Recreation Center  
Wave Generation Equipment JOC

Project name	Wave Generation Equip JOC
	Tempe
	AZ 85283
Estimator	David Holt
Labor rate table	1.0X Wbrd
Job size	1 ls
Bid date	8/3/2009 12:00 PM
Report format	Sorted by 'Group phase/Phase' 'Detail' summary



Item	Description	Takeoff Qty	Amount	Material	Amount	Subcontract	Amount	Equipment	Amount	Other	Amount	Total	
<b>1.000</b>	<b>GENERAL REQUIREMENTS</b>												
1.002	Project Manager 5 Project Manager Project Manager 8.00 Labor hours	0.20 wk	447									447	
1.004	Estimator 5 Project Estimator Estimator 16.00 Labor hours	0.40 wk	960									960	
1.313	Postage / Courier 10 Wire transfer of payments Postage / Courier	3.00 ea	75			0						75	
1.608	Misc. Rental Equipment 5 Equipment unloading Misc. Rental Equipment 8.00 Labor hours	1.00 ls	256	50				250				556	
			256	50				250				556	
	<b>GENERAL REQUIREMENTS</b>		<b>1,663</b>	<b>125</b>	<b>0</b>	<b>0</b>	<b>250</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,038</b>	
<b>13.000</b>	<b>SPECIAL CONST</b>												
13.600	In-ground Swimming Pools sub Wave Generation Equip Vendor sub Direct Drive Blower Allowance sub Adaptor plates @ wave valves In-ground Swimming Pools	1.00 ls 1.00 ls 1.00 ls	- - -	- - -	135,000 10,000 4,500	- - -	- - -	149,500	- - -	- - -	- - -	- - -	135,000 10,000 4,500 149,500
	<b>SPECIAL CONST</b>		<b>0</b>	<b>0</b>	<b>149,500</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>149,500</b>	

Estimate Totals

Description	Amount	Totals	Rate
Labor	1,863		
Material	125		
Subcontract	149,500		
Equipment	250		
Other			
	<u>151,638</u>	<b>151,638</b>	
GL & Auto INSURANCE	1,798		1.000 %
Installation Floater Policy	1,421		0.790 %
OVERHEAD AND PROFIT	14,388		8.000 %
Tempe JOC Bond Rate	<u>1,708</u>		
	<b>19,316</b>	<b>170,854</b>	
Tempe Sales Tax (65% x 8.10%)	8,995		5.265 %
<b>Total</b>		<b>179,849</b>	

COT Project Name: Kiwanis Park Recreation Building  
COT Project Number: Wave Generation Equipment Design & Purchase

**LIST OF SUBCONTRACTORS**

In accordance with the provisions of Section 108.2 of the MAG Specifications, the JOC Contractor shall provide for each Job Order the information listed below regarding proposed subcontractors which are subject to approval by the City.

<b>Subcontractor</b>			
<u>Name</u>	<u>Address</u>	<u>Type of Work</u>	<u>% of Total Contract</u>
Murphy's Wave, Ltd.	Euro House, 423 Hillington Road, Glasgow, G52 4BL, Scotland, U.K.	Wave generation equipment	83.1



**TECHNICAL SPECIFICATION & CONTRACT PROPOSAL**

**8 Chamber Wide "Breaker" Wave Generator**  
**At**  
**Tempe Kiwanis Recreation Centre**



**Prepared For:**

**Mr Dave Holt  
ForeSite Design & Construction, Inc.  
USA**

**Murphy's Waves Ltd  
Euro House, 423 Hillington Rd  
Glasgow, G52 4BL,  
Scotland,  
U.K.**

## INTRODUCTION

The "Breaker" wave generator is quite simply the most advanced machine on the market. The generators encompass the most up to date technology, with total quality being incorporated at the design stage, using only the finest internationally available components, such as Festo Pneumatics, Alan Bradley Controls and WEG Motors Ltd, to ensure many years of reliable service. All Murphy's Wave Machines carry full UL Certification

Specifically designed to operate in large water park projects, the wave patterns can be customised to produce waves to the client's requirements. The remote panel allows the operator to select which wave pattern is produced in the wave pool.

The waves are pneumatically produced, with no moving parts in contact with the water. The generation of the waves in the pool takes place in 8 wave chambers that are specially designed to ensure maximum wave performance.

High-pressure air is delivered by controlled volume via our specifically developed wave fans, through GRP or stainless steel ducting and flexible connections, to our unique stainless steel dual port valves. These valves are individually installed on each wave chamber, and have quick response pneumatics controlled by the latest PLC control panel. It is possible to generate waves in a variety of differing patterns and heights.

During commissioning, each wave pattern will be demonstrated and adjusted to the client's satisfaction.

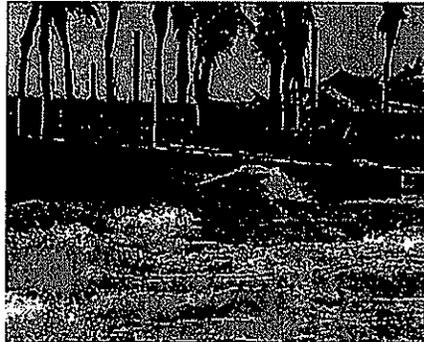


\*All photographs contained within this document are the property of Murphy's Waves Ltd. The photographs contained herein are of previous projects and used for illustrative purposes only. Wave heights, wave patterns and equipment layout may vary depending upon final specification of the wave machine.

## DESIGN CRITERIA

The "BREAKER" wave generator has been designed for constant or time controlled operation, and to produce the following wave patterns.

1. Diamond
2. Double Diamond
3. Parallel
4. Half Parallel
5. Break Left
6. Break Right
7. Vee In
8. Vee Out



Maximum Wave Height: ~ 4ft  
In D-Diamond Pattern

## EQUIPMENT SUMMARY

- |   |      |                                                                |
|---|------|----------------------------------------------------------------|
| 2 | Off  | 55Kw High performance wave fans                                |
| 8 | Off  | Special Adaptor Plates in 316L Stainless Steel                 |
| 8 | Off  | Wave Valves manufacture from high grade 316 Stainless Steel    |
| 8 | Off  | Pneumatic cylinders and solenoid drive assemblies              |
| 2 | Off  | Complete set of triple layer GRP / uPVC high pressure air duct |
| 2 | Sets | Flexible connections and fixings                               |
| 1 | Off  | Main control panel                                             |
| 1 | Off  | Pool side remote panel with strobe light & warning horn        |
| 1 | Set  | ABS Air line with pressure regulator and auto drain system     |
| 1 | Set  | Stainless steel and galvanised duct supports                   |
| 1 | Set  | Holding down bolts, supports, brackets & fixings               |
| 1 | Set  | Selected Spare Parts                                           |

## DESIGN DRAWINGS (as supplied to Water Technology)

We will assist in the design development of the project by providing any technical information and drawings that may be required by the design team or client. We will supply the following design drawings: ~

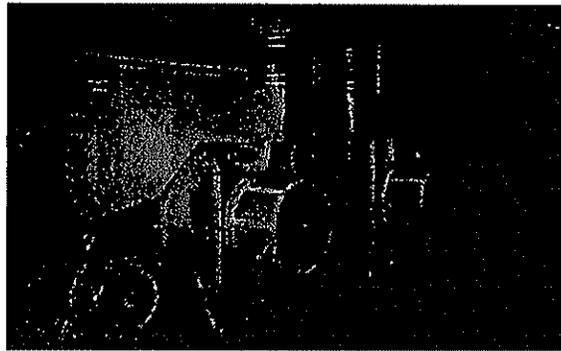
- Plantroom layouts (all views)
- Wave Chamber Details (all views)
- Equipment Layout
- Installation Drawings
- Electrical Connections (available on manufacture of the wave machine)

*WAVES*

## WAVE FANS

The wave fans are of a type specifically designed for use in wave generation and have been developed, with long life and ease of maintenance, as a prime consideration.

The shaft of the high efficiency backward curve impeller runs in a special high speed bearing assembly, driven via a high quality coupling. Access to the impeller and fan housing is via a removable inspection plate.



Back - To - Back High Performance Wave Fans

MOTOR: - 55Kw (75hp) x 2

SUPPLY: - \* PLEASE CONFIRM THE LOCAL POWER SUPPLY.

The motor has class F insulation and anti-condensation heaters as standard.

To reduce vibration and sound transmission, the wave fan assembly is mounted on a base frame, with rubber anti-vibration fixings.

## DUCTWORK

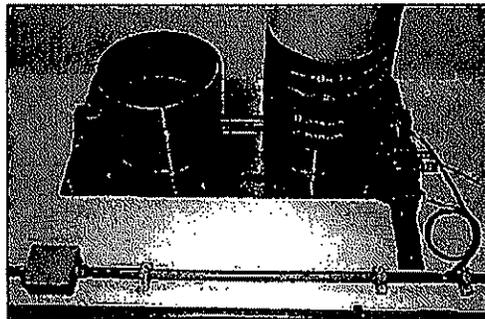
To ensure correct performance we provide specifically designed circular section triple layer GRP/uPVC high-pressure air ducting, which is supplied complete with flexible connections to the wave fans and wave valves. The duct is complete with all necessary fastenings to secure the flexible connections in stainless steel. Gaskets are provided at all necessary locations

*Q*

## WAVE VALVES

The valves are manufactured throughout in 316L stainless steel to the highest standard of quality. The special dual port valves have been designed to optimise airflow to and from the wave chambers.

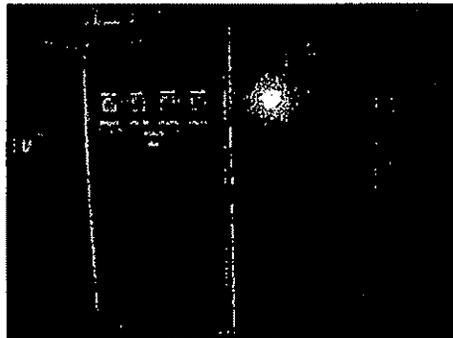
The drive to the valves is provided by compact, clean line lubrication free pneumatic cylinders, using the latest in micro-pneumatic control. Each cylinder is fitted with its own double acting solenoid valve assembly.



Stainless Steel Wave Valve & Triple Layer Air Duct

## MAIN CONTROL PANEL

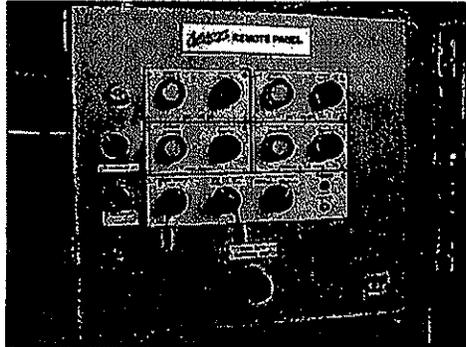
The main control panel is a wall mounted IP55 enclosure that houses the star/delta starter for the wave fan, all other starters, mcb's, overloads, and out going connections. The main PLC to control the wave patterns is also contained in the panel, which is complete with door isolator and other control switches.



Typical Main Control Panel

### REMOTE CONTROL PANEL

The remote panel is normally mounted at the poolside. From this point the operational staff has total control of the wave generator being able to start and stop the machine and select the desired wave pattern.



Typical Remote Panel

### ANCILLARY EQUIPMENT

On projects where noise reduction is a requirement, we would be pleased to quote for any additional items of plant that may be required to meet local regulations. This would normally relate to noise attenuation, for the ventilation of the plantroom and acoustic doors.

### INSTALLATION & COMMISSIONING

Our highly qualified engineers will provide expert supervision of all installation work. All associated costs such as flights, accommodation and living expenses are included within our price. Our engineer will require 3 unskilled workers (paid for by the client) to assist with the installation work. On completion of the installation our engineer will test and commissioning the wave generator and for this he will require the pool to be filled to the correct operating level and the wiring to our equipment finalised. Finally our engineer will then instruct the client's representative in the operation and maintenance of the equipment and demonstrate the wave machine to the client. The system can then be handed over when the commissioning documentation has been signed and accepted by the client.



**MANUALS & GENERATOR SERVICE**

We will supply three copies of our operating and maintenance manuals, in English, to the client on completion of the commissioning. The manuals contain a list of recommended spares, and a full list of all components of the "BREAKER" wave generator. The manual will also detail the routine maintenance that should be carried out to the wave generator.

As part of our after care service we are pleased to offer an annual service contract. This is normally undertaken at the start of the season to ensure the smooth operation of the generator, and that the wave machine is tuned to peak performance.

**EXCLUSIONS**

The scope of our supply and works are limited to the items detailed in this specification, and we have not included for any civil or builders work, electrical wiring from the mains supply to our equipment, noise reduction equipment or plantroom ventilation.



Mandalay Bay- Las Vegas



Geauga Lake Water Park - USA





## **NOISE REDUCTION**

Noise reduction equipment is not included in our scope of work. To reduce noise breakout and to secure the equipment room we recommend the installation of double leaf acoustic doors manufactured to the following specifications:

**Construction:** Double Leaf – Each leaf shall be 64mm thick, fabricated from 2.0mm thick steel sheet filled with sound absorbing and damping elements. Leaf shall be internally reinforced to accept hardware.

**Frame** -Architectural split frame shall be fabricated from 2.0mm thick steel sheets, channels and plates also to be filled with sound absorbing and damping elements. Structural support incorporated into the builder's wall will be needed to support the door assembly, please refer to IAC for more information.

**Acoustic Seals** - Side and head of door and frame shall each receive two sets of acoustic seals. An acoustic labyrinth shall be created when door is in closed position. Bottom of door leaf shall contain continuous gravity-activated seal which shall compress against steel threshold as door is closed.

**Pre-hung** - Assembly and adjustments of door leaf, frame, acoustic seals and hinges should take place at factory to insure ease of installation, reliable operation and acoustic performance. The entire unit should be shipped to job site ready to install and operate.

**Hinges** – Suitable reinforced hinges powder painted to match the door.

**Preparation** - Door leaf and frame shall be predrilled and tapped in accordance with manufacturer's templates to accept specified hardware.

**Acoustic Rating:** STC-53(dB) to achieve minimum R<sub>w</sub>45dB once installed (subject to flanking) Certified Laboratory performance in single leaf arrangement as follows:

Frequency (Hz)	63	125	250	500	1K	2K	4K	8K
STC-53	22	30	47	52	53	52	58	65



18<sup>th</sup> September 2007  
Breaker Wave Machine  
Kiwanis Recreation Centre  
City of Tempe - AZ

**PROGRAMME FOR MANUFACTURE:**

Design Drawings: ~ Available 14 days from signing contract  
Manufacture: ~ 14 weeks from date of deposit  
Packaging: ~ 1 week  
Shipping: ~ 4 weeks  
Installation & Commissioning: ~ 8 Days (one visit).

**SHIPPING: ~**

On completion of manufacture the wave generator and all other necessary equipment are professionally boxed and packaged to prevent damage during transit. To protect the equipment further it is placed into wooden crates before finally being placed into a shipment container and delivered direct to the project site (DDU)

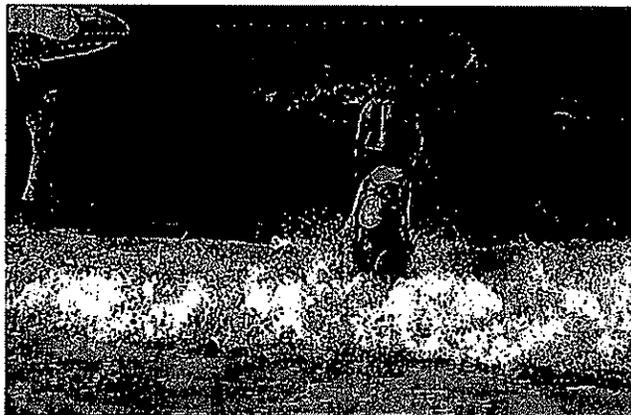
**EQUIPMENT SUMMARY: ~**

25M Chamber "BREAKER" Wave Generator comprising in total of: 2 x 55kw fan sets, 8 x stainless steel (316 grade) wave valves with non return valves; 1 x compressor, 1 x main electrical control panel and pool side remote unit, 8 x pneumatic cylinder / solenoid assemblies and all the necessary high pressure ducting and pipework, supports and fixings.

Maximum Wave Height 4ft (D-Diamond pattern)

**TRADE PRICE: \$135,000 USD**

Price guaranteed until 1<sup>st</sup> November 2009



Wild Wadi Resort - Dubai



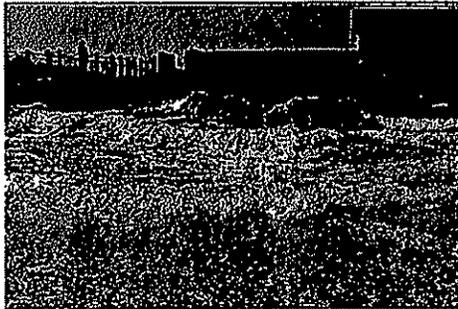
**INCLUDED IN THE TOTAL PRICE**

**Our "Total Price" includes the following: ~**

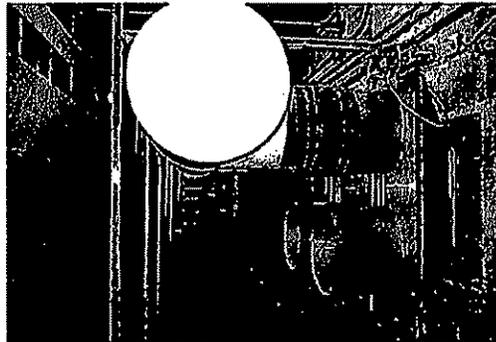
- Design assistance with the wave pool.
- Advice on all freeboard levels and pool slab gradient.
- All necessary drawings of our wave generator and the wave chambers.
- Technical support for your consulting engineer or park design team.
- Packing and delivery direct to the project site (DDU)
- Installation supervision carried out by our own fully qualified engineer.
- Full commissioning / start up carried out by our own fully qualified engineer.
- All air fares / travel and accommodation expenses for our engineering staff are included
- Full one-year manufacturers warranty.
- Selected Spare Parts Package
- Our engineer will fully instruct all operational staff on the use of the wave machine.
- 3 Copies of our operating and maintenance manuals.

**Exclusions:**

Our only exclusions to the 'Total Price' are for all electrical wiring from the mains supply to our equipment (arranged by the client and normally carried out by local contractor) and for any local taxes or duty.



City of Somerset - Kentucky



New Refit Replacement Wave Machine



16<sup>th</sup> September 2007  
Breaker Wave Machine  
Kwanis Recreation Centre  
City of Tempe - AZ

**PAYMENT TERMS & BANK DETAILS**

**PAYMENT TERMS**

Order secured by the following payment terms: ~

- 35% Deposit by Bank Transfer (T.T)
- 60% by Bank Transfer prior to shipping
- 5% by Bank Transfer on completion or 90 days from shipping, whichever is first

(We also accept payment by Letter of Credit confirmed by a UK bank.)

**BANK DETAILS**

Murphy's Waves Ltd  
Bank of Scotland  
Glasgow Chief Office  
110 St Vincent Street  
Glasgow.

Account Number: ~ 68450 USD01  
Sort Code: ~ 80 54 01  
Bank Swift Code: ~ BOSSBOFSGB2S  
IBAN: ~ GB96 BOFS 8020 1368 4501 01

Authorised Signature (client).....

On Behalf of Murphy's Waves Ltd.....

18<sup>th</sup> September 2007  
Breaker Wave Machine  
Kiwanis Recreation Centre  
City of Tempe - AZ



**CUSTOMER SATISFACTION**  
**AND GUARANTEE**

All of our wave machines come complete with a comprehensive guarantee for complete peace of mind. The warranty period will last for a period of one year from the 'hand over' date (subject to all payments having been received) and covers the replacement of all faulty components supplied by us as part of the contract.

In the unlikely event of a mechanical failure, Murphy's Waves Ltd will replace any faulty parts within a maximum period of 48hrs from notification. This may include parts being sourced locally and sent directly to site or a replacement part being sent from our factory by over night express courier. In the event that a failure cannot be repaired, Murphy's Waves Ltd will dispatch an engineer to action repair work.

Customer care is extremely important to us and we take great pride in having a 100% customer satisfaction policy. Should any customer be unhappy with the quality of equipment or service received then we would kindly request that the complaint is brought to our attention immediately in order that we can effect the appropriate action. As part of our ongoing Quality Control Audit each client will be asked to complete a Customer Satisfaction Questionnaire at the end of the warranty period. We would be grateful if you could spend a few moments to complete the questionnaire and return it to our head office.

*"Thank you for choosing Murphy's Waves Ltd"*

