NORTH CAROLINA

RESIDENTIAL SWIMMING POOL

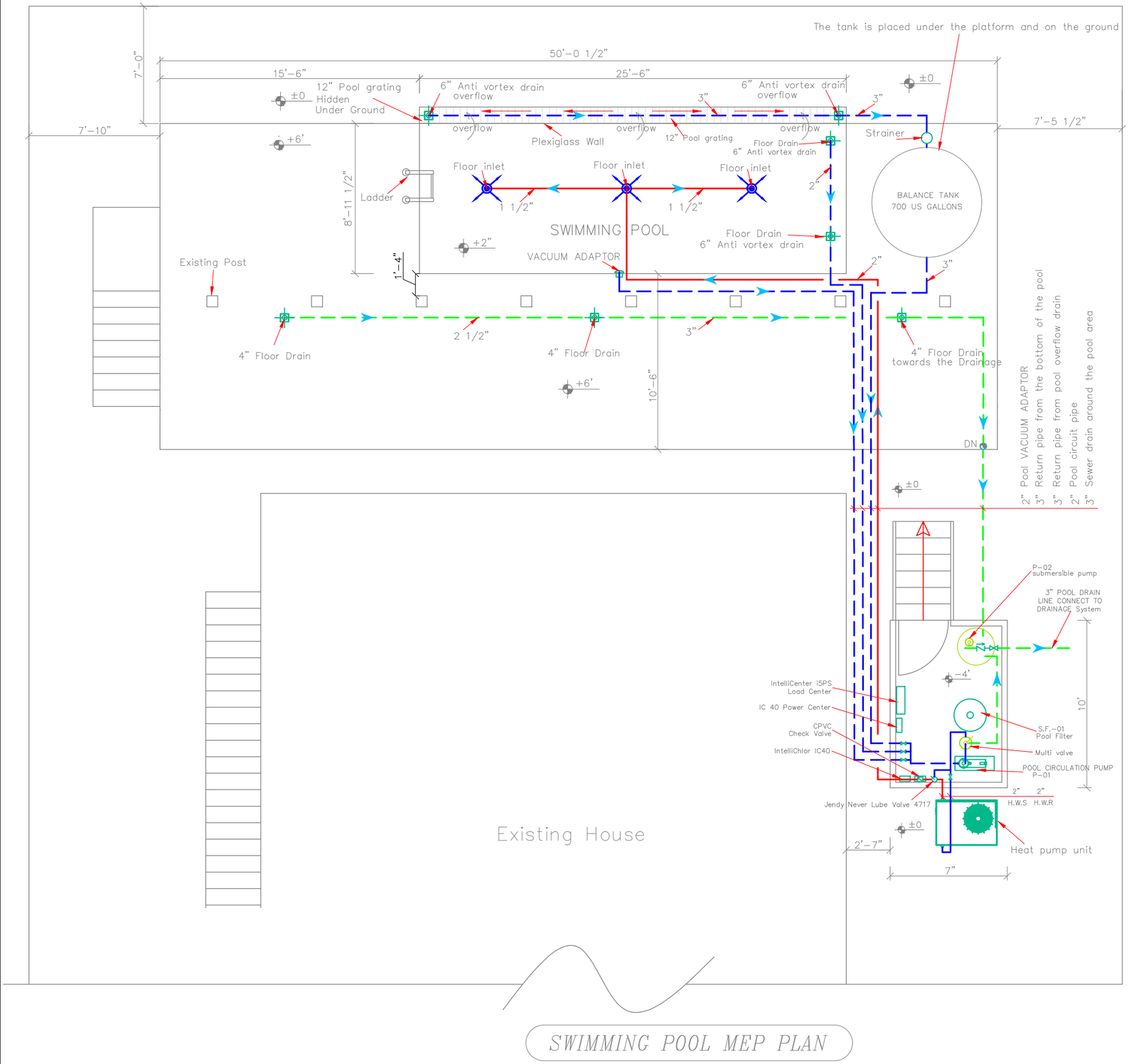
POOL MEP DESIGN & BIM DOCUMENTATION

Hydraulic & Piping Design | Equipment Selection | Revit/BIM

Selected Project

HONAAM ENGINEERING

Behrouz Armani - MEP Designer



SWIMMING POOL MEP PLAN

LEGEND	
Floor Drain	
Floor inlet	
CPVC Check Valve	
Check Valve	
Gate Valve	
IntelliChlor IC40	
IC 40 Power Center	
IntelliCenter i5PS Load Center	
PoolCirculation Pump	
submersible pump	
Pool Filter	
Multi Valve	
Jendy Never Lube Valve 4717	
Heat pump unit	
Vacuum Adaptor	

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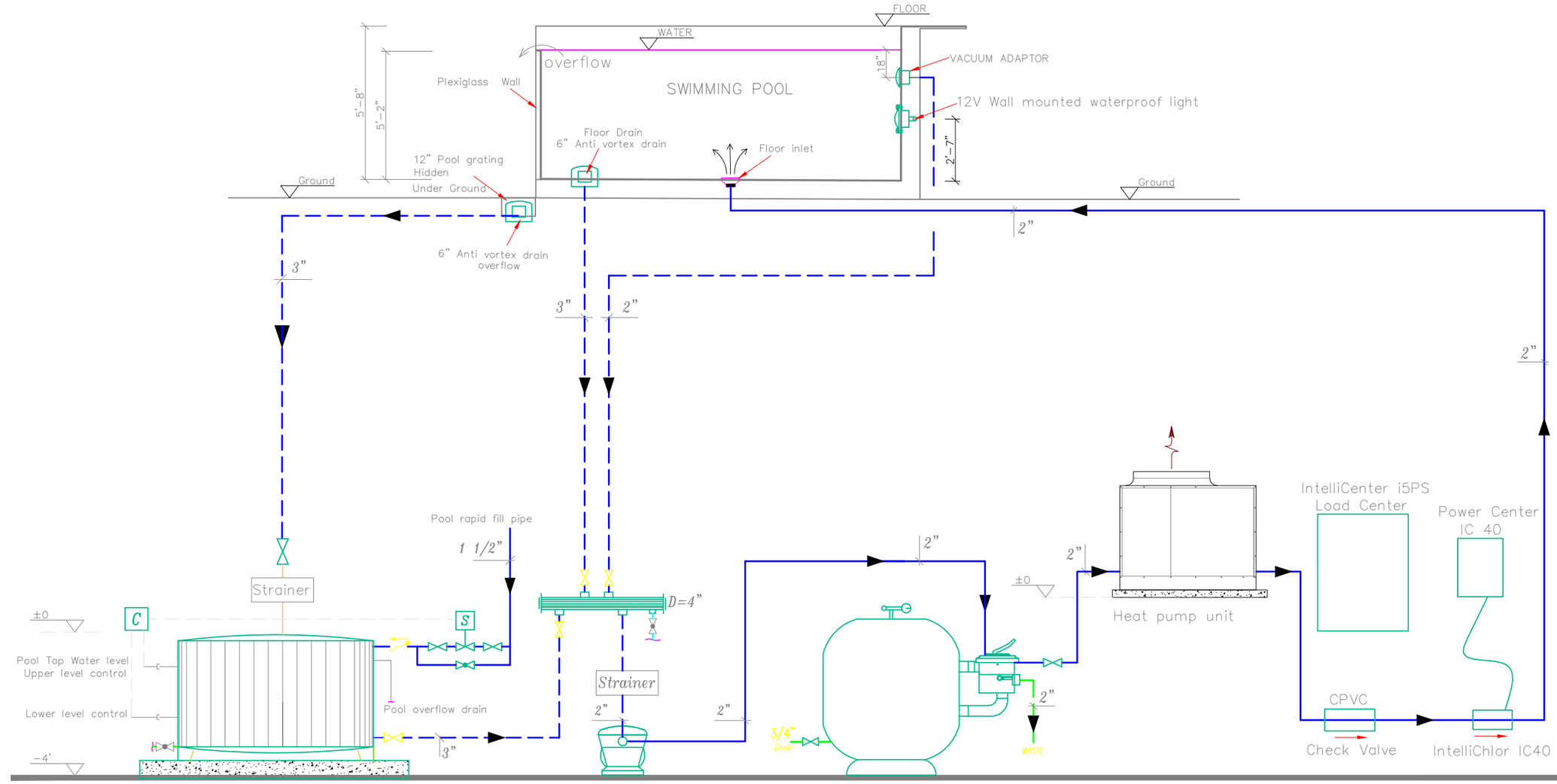
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SHEET NAME :
SWIMMING POOL MEP SITE PLAN



SWIMMING POOL DIAGRAM

no scale

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SHEET NAME :	SWIMMING POOL DIAGRAM

FIBERGLASS SAND FILTER

Pool Gallons 8850 Gallons

Turnovers / Day 4

Time / Turnovers 6 h

GPH 8850 / 6 h = 1475 GPH / 60 S = (24.6 GPM)

FIBERGLASS SAND FILTER

Description	PRODUCT		parameter		Silica	Valve	Ft^2	Q		Used	Number	Symbol
	model	Brand	in H	in D				m^3/hr	gpm			
PENTAIR – Triton Fiberglass Sand Filter	TR-50	PENTAIR	34.75"	21.5"	225 lbs.	2"	2.46		49	Pool	1	S.F.-01

POOL CIRCULATING PUMP SCHEDULE

Model	controller	Electrical System				H		Q		Used	System	Number	Symbol
		FLA	V-ø-CV	R.P.M	HP	m	Ft	m^3/hr	gpm				
PENTAIR WFDS-6 & 28	IntelliCenter i5PS Load Center	8.8 – 9.6 A	230-1-60	–	1.5		22		64	pool circuit	Ground pump	1	P-01

SUBMERSIBLE PUMP

Model	controller	Discharge	Electrical System				H		Q		Used	System	Number	Symbol
			FLA	V-ø-CV	R.P.M	HP	m	Ft	m^3/hr	gpm				
Liberty LE71A3	electrical panel	3"	12 A	115-1-60	1725	3/4		8		144	Drainage Submersible Pump	Submersible pump	1	P-02

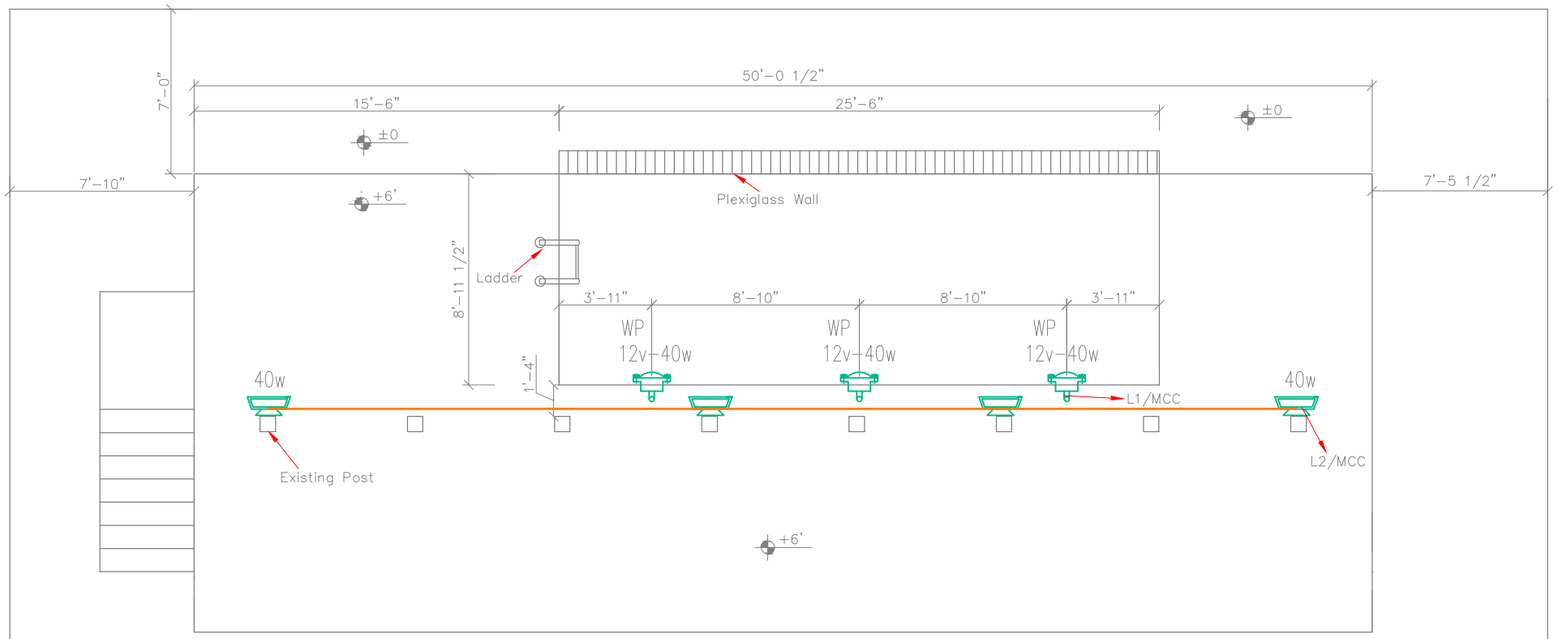
HEAT PUMP UNIT

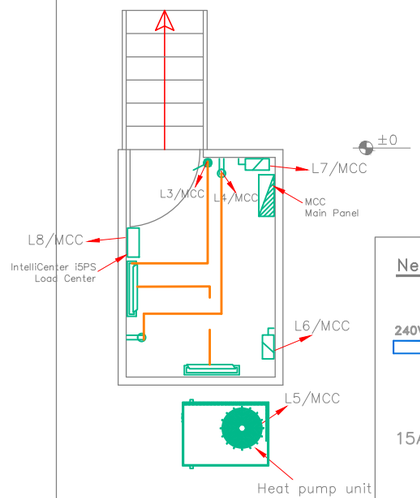
Description	Brand	Power	Distances cm L – W – H	Shipping Weight	Cooling Capacity		Heating Capacity		Used	Symbol	Number
					Btu/hr	KW	Btu/hr	KW			
Model UltraTemp 120 H/C	PENTAIR	230V / 1Ø / 60Hz	991*787*1130	126 kg	71,000	20.8	127,000	37.2	Heating/Cooling	HEAT PUMP	1

Equipment Specifications

SWIMMING POOL

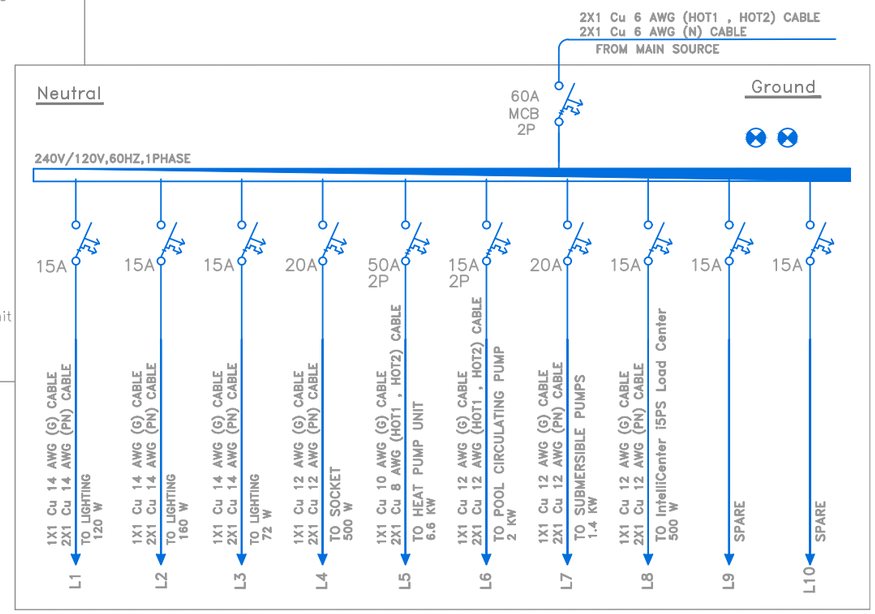
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SHEET NAME : Equipment Specifications





ELECTRICAL PLAN & SLD

LEGEND	
MCC Panel	MCC
IntelliCenter i5PS Load Center	
12V Wall mounted waterproof light	
36V 4 feet Wall mounted LED light	
isolator	
Duplex Socket	
Gang Switches	
20 W Wall mounted LED light	
Heat pump unit	
Miniature Circuit Breaker – MCB	



MCC PANEL

N

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SHEET NAME :

ELECTRICAL PLAN & SLD

UNDERWATER LIGHTING

1. GENERAL

All underwater lighting works shall comply with project specifications, manufacturer requirements, and applicable electrical and safety codes.

Underwater light fixtures shall be , fully waterproof, submersible, and suitable for installation in pools, fountains, or similar water features.

The contractor shall coordinate all related works with the architectural, structural, electrical, and plumbing disciplines.

2. UNDERWATER LIGHT FIXTURE & NICHE INSTALLATION

Provide a factory-manufactured light niche compatible with underwater fixtures.

The niche shall be securely fixed in place prior to concrete pouring.

The niche must be aligned flush with the final interior finish of the pool or fountain wall.

Install the niche at the heights and locations shown on the drawings.

Protect the niche during concrete placement to prevent blockage, damage, or displacement.

3. ELECTRICAL CONDUIT REQUIREMENTS

Provide PVC electrical conduit (Ø25–32 mm) from each underwater light niche to its corresponding junction box.

Conduits shall be embedded in concrete and installed with a continuous upward slope to avoid water accumulation.

Conduit routing shall avoid unnecessary bends and ensure continuous accessibility from niche to junction box.

Any conduit passing through the pool shell shall include proper waterproofing measures.

If the niche is metallic, grounding/bonding connections shall be provided.

4. JUNCTION BOX INSTALLATION

Provide a waterproof and corrosion-resistant junction box for each underwater light.

The junction box shall be installed a minimum of 300 mm above maximum water level and located where maintenance access is ensured.

All conduit terminations at the junction box shall be watertight and properly sealed.

5. POWER SUPPLY & TRANSFORMERS

Underwater lighting Systems shall operate on low-voltage power (12V or 24V AC) according to manufacturer requirements.

Step-down transformers shall be installed in the electrical room or designated service location.

Power and control cables from the junction box to the transformer shall be routed in conduit and sized according to electrical load.

All circuits serving underwater lighting shall be clearly labeled.

6. SAFETY & TESTING

Verify proper grounding and bonding connections for all underwater fixtures.

Perform insulation resistance and continuity tests before energizing the System.

Conduct full functional testing of underwater lights after filling the pool and completing final installation.

Submit manufacturer datasheets, installation manuals, and as-built drawings upon completion of the project.

7. COORDINATION & FINALIZATION

Coordinate conduit routing with structural reinforcement to avoid conflicts prior to concrete work.

Contractor shall verify cable lengths, fixture spacing, transformer locations, and accessibility of junction boxes.

All dimensions, elevations, and installation details shall be checked and confirmed on site before execution.

POOL PIPING & WATER CIRCULATION NOTES

Based on North Carolina Standards (15A NCAC 18A .2518)

1. Water circulation System shall circulate the entire pool volume at least 4 times per 24 hours. System shall operate continuously during pool operation.

2. Suction flow must originate from main drains and/or skimmers. If both are used, water shall be drawn simultaneously from each.

3. All piping must be non-toxic, corrosion-resistant, and capable of withstanding operating pressures without leaks. Use Schedule 40 PVC for new pools. Flexible pipe only if rigid pipe cannot achieve required angles and approved to NSF/ANSI/CAN 50.

4. Suction piping velocity shall not exceed 6 ft/s; return piping ≤ 10 ft/s (PVC) or ≤ 8 ft/s (copper).

5. Install basket-type strainer upstream of pump to prevent debris entry. Openings ≤ ¼ in (6.4 mm); free flow area ≥ 4× pump suction area. Strainer must be accessible for daily cleaning.

6. Provide vacuum cleaning System (built-in vacuum ports or equivalent). Vacuum ports shall be 6–18 in below water surface and equipped with self-closing caps if installed after May 1, 2010.

7. Water supply must meet public water standards; all supply lines require backflow protection (airgap, vacuum breaker, or reduced-pressure device).

8. Provide sufficient return inlets for uniform circulation. No point in pool shall be > 25 ft from nearest inlet. Minimum four return inlets per pool.

9. Main drains must be unblockable or dual drains connected symmetrically. Drain covers must meet ASME/ANSI A112.19.8 anti-entrapment standards.

10. Piping embedded in or passing through pool shell shall be installed before concrete placement with proper sleeves, sealing, and corrosion-resistant material.

11. Piping layout shall not conflict with underwater light niches, conduits, or structural reinforcement.

12. Install valves and flow controls to permit maintenance and safe isolation of the circulation System.

13. Contractor shall verify all dimensions, elevations, and installation details on site before execution.

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ELECTRICAL NOTES