Contract Documents

Town of Glastonbury, CT

Grange Swimming Pool Repairs

February 2019

Weston & Sampson Engineers, Inc.
273 Dividend Road
Rocky Hill, CT 06067
www.westonandsampson.com
Tel: 860-513-1473

TOWN OF GLASTONBURY

INVITATION TO BID

BID #	ITEM	DATE & TIME REQUIRED
GL-2019-28	Grange Swimming Pool Repairs	March 5, 2019 at 11:00 A.M.

The Town of Glastonbury will receive Sealed Bids, in duplicate, for Grange Swimming Pool Repairs, 500 Hopewell Road, Glastonbury, CT. Bids will be received only at the Office of the Purchasing Agent, Town Hall (second level), 2155 Main Street, Glastonbury, CT 06033, Attention: Mary F. Visone, Purchasing Agent, no later than the time and date indicated above (local time), at which time they will be publicly opened and read aloud. No late bids will be accepted.

Bid Forms, Plans, and Specifications may be obtained at no cost from the Town's website at www.glastonbury-ct.gov or the State's website at www.das.state.ct.us.

Sealed bids must be accompanied with Bid Security. Bid Security shall be issued payable to the "Town of Glastonbury" in the form of a certified check or Bid Bond in an amount not less than 10% of the total amount of the base bid. The Bid Bond must be issued by a surety company licensed in the State of Connecticut. Cashier's checks will not be accepted.

A mandatory pre-bid meeting will be held at the Grange Swimming Pool, 500 Hopewell Road, Glastonbury, CT on February 20, 2019 @ 10:00 A.M. Interested Bidders are encouraged to attend.

Prevailing Wages: The contractor must comply with Section 31-53 of the Connecticut General Statutes as amended, including annual adjustments in prevailing wages.

The Town reserves the right to waive informalities or reject any part of or the entire bid when said action is deemed to be in the best interest of the Town.

An Affirmative Action/Equal Opportunity Employer. Minority/Women's Business Enterprises are encouraged to apply.

Mary F. Visone
Purchasing Agent

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1. Sealed bids (**one original and one copy**) on the attached Bid Forms will be received at the Office of the Purchasing Agent, Town Hall, 2155 Main Street, Glastonbury, Connecticut 06033 (second level). At the designated time of opening, they will be publicly opened, read, recorded and placed on file.

2. Whenever it is deemed to be in the best interest of the Town, the Town Manager, Purchasing Agent or designated representative shall waive informalities in any and all bids. The right is reserved to reject any bid when such action is deemed to be in the best interest of the Town of Glastonbury.

3. The basis of the award will be to the lowest qualified, responsible and responsive bidder for the total lump sum bid price unless otherwise specified.

4. Bids will be carefully evaluated as to conformance with stated specifications.

5. The envelope enclosing your bid should be clearly marked by bid number and title, due date and time of opening, Bidder's company name and address.

6. Specifications must be submitted complete in every detail and, when requested, samples shall be provided. If a bid involves any exception from stated specifications, they must be clearly noted as exceptions, underlined, and attached to the bid.

7. The Bid Documents contain the provisions required for the requested item. Information obtained from an officer, agent, or employee of the Town or any other person shall not affect the risks or obligations assumed by the Bidder or relieve him/her from fulfilling any of the conditions of the bid.

8. Each Bidder is held responsible for the examination and/or to have acquainted themselves with any conditions at the job site which would affect their work before submitting a bid. Failure to meet this criteria shall not relieve the Bidder of the responsibility of completing the bid without extra cost to the Town of Glastonbury.

9. Any bid may be withdrawn prior to the above-scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No Bidder may withdraw a bid within sixty (60) days after the actual date of the opening thereof. Should there be reasons why a bid cannot be awarded within the specified period, the time may be extended by mutual agreement between the Town and the Bidder.

10. Each bid must be accompanied by a bid bond payable to the Town for ten percent (10%) of the total amount of the bid. The bid bond of the successful Bidder will be retained until the payment bond and performance bond have been executed and approved, after which it will be returned. A certified check may be used in lieu of a bid bond. The Town of Glastonbury will not be liable for the accrual of any interest on any certified check submitted. Cashier's checks will not be accepted.

11. A 100% Performance Bond and 100% Payment bond are required of the successful bidder. These bonds shall cover all aspects of the specification and shall be delivered to the Purchasing Agent prior to the issuance of a purchase order. The Performance and Payment Bonds will be returned upon the delivery and acceptance of the bid items.

12. The Bidder agrees and warrants that in the submission of this sealed Bid, they will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religion, national origin, sex, or physical disability including, but not limited to blindness, unless it is shown by such Bidder that such disability prevents performance of that which must be done to successfully fulfill the terms of this sealed Bid or in any manner which is prohibited by the laws of the United States or the State of Connecticut: and further agrees to provide the Human Relations Commission with such information requested by the Commission concerning the employment practices and procedures of the Bidder. An Affirmative Action Statement will be required by the successful Bidder.

13. Bidder agrees to comply with all of the latest Federal and State Safety Standards and Regulations and certifies that all work required in this bid will conform to and comply with said standards and regulations. Bidder further agrees to indemnify and hold harmless the Town for all damages assessed against the Town as a result of Bidder's failure to comply with said standards and/or regulations.

14. All correspondence regarding any purchase made by the Town of Glastonbury shall reference the Town's purchase order number. Each shipping container shall clearly indicate both Town purchase order number and item number.

15. Bidder is required to review the Town of Glastonbury Code of Ethics adopted July 8, 2003 and effective August 1, 2003 and revised October 29, 2013 and effective November 8, 2013. Bidder shall acknowledge that they have reviewed the document in the area provided on the bid/proposal response page (BP). The selected Bidder will also be required to complete and sign an Acknowledgement Form prior to award. The Code of Ethics and the Consultant Acknowledgement Form can be accessed at the Town of Glastonbury website at **www.glastonbury-ct.gov**. Upon entering the website scroll down to click on **Bids & Proposals Icon** which will bring you to the links for the **Code of Ethics** and the **Acknowledgement Form**. If the Bidder does not have access to the internet, a copy of these documents can be obtained through the Purchasing Department at the address listed within this bid/proposal.

16. Any bidder, in order to be considered, shall be engaged primarily in the business of pool installation and repair with a minimum of five (5) years experience, and completed a minimum of (5) similar projects within the last (5) years, as related to the specifications. The Contractor shall provide (5) References of completed similar projects as referenced on the bid documents.

17. **Non-Resident Contractors:** (if applicable)
Upon award the Town is required to report names of nonresident (out of state) Contractors to the State of Connecticut, Department of Revenue Services (DRS) to ensure that Employment Taxes and other applicable taxes are being paid by Contractors. **A single surety bond for 5% of the entire contract price is required to be filed with DRS by any unverified nonresident prime or general contractor (if awarded) where the contract price for the project is $250,000 or more.** The contractor will be required to promptly furnish to the Town a copy of the **Form AU-968 - Certificate of Compliance** issued by the State of Connecticut, DRS. See State of Connecticut **Notice SN 2012 (2).**

18. Bidder shall include on a sheet(s) attached to its proposal a complete disclosure of all past and pending mediation, arbitration and litigation cases that the bidder or its principals (regardless of their place of employment) have been involved in for the most recent five years. Please include a

statement of the issues in dispute and their resolution. Acceptability of Bidder based upon this disclosure shall lie solely with the Town.

19. Bidder or its principals, regardless of their place of employment, shall not have been convicted of, nor entered any plea of guilty, or nolo contendere, or otherwise have been found civilly liable or criminally responsible for any criminal offense or civil action. Bidder shall not be in violation of any State or local ethics standards or other offenses arising out of the submission of bids or proposals, or performance of work on public works projects or contracts.

20. Municipal construction projects are exempt from Federal Excise Taxes, as well as, State of Connecticut Sales, Use and Service Taxes and should not be include in the Bidder's proposal.

21. After award of Contract, Owner will require the Contractor's schedule of Values, which shall be submitted at the preconstruction meeting. The Schedule of Values must accurately reflect job costs and include a complete breakdown of material and labor costs.

22. The Town of Glastonbury is dedicated to waste reduction and the practice of using and promoting the use of recycled and environmentally preferable products. Bidders are encouraged to submit bid responses that are printed double-sided (except for the signed proposal page) on recycled paper, and to use paper dividers to organize the bid for review. All bid pages should be secured with a binder clip, staple or elastic band, and shall not be submitted in plastic binders or covers, nor shall the bid contain any plastic inserts or pages. We appreciate your efforts towards a greener environment.

23. **Compliance with Town Ordinance Prohibiting natural Gas Waste & Oil Waste From Natural Gas Extraction Activities or Oil Extraction Activities:** If this bid is for the construction, repair or maintenance of Town owned and/or maintained roads or real property within the Town related to either (a) the purchase or acquisition of materials by the town to be used to construct, repair or maintain any Town owned and/or maintained road or real property within the Town or (b) the performance of services for the Town to construct, repair or maintain any Town owned and/or maintained road or real property within the Town, the Bidder shall provide the following signed statement to the Town in its bid response, which shall be a certification under penalty of perjury by the Bidder:
"*The undersigned Bidder, _____, hereby submits a bid for materials, equipment and/or services for the Town of Glastonbury. The bid is for bid documents titled* ***GRANGE SWIMMING POOL REPAIRS***
The undersigned Bidder hereby certifies under penalty of perjury that in connection with the bid and, if it is awarded the purchase order or contract by the town, in connection with any purchase order or contract: (1) no materials containing natural gas waste or oil waste from natural gas extraction activities or oil extraction activities shall be provided to the Town or shall be used in providing any services to the Town by the undersigned Bidder or any contractor, sub-contractor or agent of the undersigned Bidder; (b) nor will the undersigned Bidder or any contractor, sub-contractor or agent of the undersigned Bidder apply any natural gas waste or oil waste from natural gas extraction activities or oil extraction activities to any publicly owned and/or maintained road or real property within the Town of Glastonbury in performing its obligations under the purchase order or contract. The undersigned Bidder hereby agrees and acknowledges that this requirement shall be a term of the purchase order or contract, if it awarded the purchase order or contract by the Town, and any breach of this provision shall be a breach of the purchaser order or contract."

24. **State Prevailing Wage Rates:**

Respondents shall comply with State Statutes concerning Employment and Labor Practices, if applicable, and Section 31-53 of the Connecticut General Statutes, as amended (Prevailing Wages). Wage Rate Determination for this project from the State of Connecticut is included in the Bid Documents. Certified payrolls for site labor shall be submitted weekly to the Town's Representative or his designee on the correct State of Connecticut form. The Town reserves the right to, without prior notice, audit payroll checks given to workers on site in order to ascertain that wages and fringe benefits are being paid as required by the State of Connecticut. Please make special note of the State requirement to adjust wage and fringe benefit rates on each July 1st following the original published rates.

NOTE that respondent is to include in its proposal all costs required by such annual increases in the PREVAILING RATES. NO escalation clauses are to be included in the respondent's proposal and NO escalation clauses will be in the Contract Agreement. Respondent is to anticipate any future increases and include these costs in the proposal response.

Contractor's invoices will not be paid if certified payrolls are incomplete, incorrect or not received in a timely manner.

All Apprentices must be registered with the State of Connecticut and their number shall not exceed the number allowed by law. Otherwise, all workers must be paid at least the Journeyman rate listed including benefits.

OSHA SAFETY AND HEALTH CERTIFICATION
Effective July 1, 2009: Any Mechanic, Laborer, or Worker, who performs work in a classification listed on the prevailing wage rate schedule on any public works project covered under C.G.S. Section 31-53, both on site and on or in the public building, must have completed a federal OSHA Safety and Health course within the last 5 years.

25. Each Bidder shall submit a list of similar projects completed within the last three years. In order to be eligible for consideration, the Bidder must have successfully completed a minimum of five (5) similar projects within the last three (3) years. Please provide project name and contact information for project coordinator (name, title, address, phone number). Please also provide contract value.

26. Any technical questions regarding this bid shall be made in writing (email acceptable) and directed to Lisa Zerio, Director of Parks and Recreation, at (860) 652-7687 or email lisa.zerio@glastonbury-ct.gov. For administrative questions concerning this bid/proposal, please contact Mary F. Visone, Purchasing Agent, at (860) 652-7588 or email the Purchasing Department at purchasing@glastonbury-ct.gov. All questions, answers, and/or addenda, as applicable, will be posted on the Town's website at www.glastonbury-ct.gov (Upon entering the website scroll down to click on Bids & Proposals Icon, then scroll down page to see the active bid table. You must click the Bid Title to view all bid details and document links). Any question shall be submitted no later than February 26, 2019 by 5:00 PM. **It is the respondent's responsibility to check the website for addenda prior to submission of any bid/proposal.**

Failure to comply with general rules may result in disqualification of Bidder.

01.00 WORKMANSHIP, MATERIALS AND EMPLOYEES

01.01 Wherever in this contract the word "Engineer" is used, it shall be understood as referring to the Director of Parks & Recreation acting through any assistants duly authorized.

01.02 The entire work described herein shall be completed in accordance with the plans and specifications to the full intent and meaning of the same. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and material shall be of good quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

01.03 The wording "furnish", "install", "construct", "furnish and install", or any similar terms, unless specifically noted to the contrary, shall include all labor, materials, water, tools, equipment, light, power, transportation, and any other services required for the completion of the work.

01.04 The Contractor shall at all times enforce strict discipline and good order among his employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned to him.

02.00 SUPERINTENDENT

02.01 The Contractor shall keep on the work during its progress, in the absence of the Contractor, a competent Superintendent. The Superintendent shall be acceptable to the Engineer and shall fully represent the Contractor. All directions given to the Superintendent shall be binding as if given to the Contractor.

03.00 PRECONSTRUCTION MEETING

03.01 A Preconstruction Meeting will be held with the Engineer, Contractor, and any private utility company prior to commencing any work. The Engineer shall arrange the meeting based on a mutually convenient time.

04.00 PERMITS

04.01 Other than local permits, all permits, licenses, and fees required for the performance of the Contract work shall be secured and paid for by the Contractor. The local building permit feel will be waived with the exception of the portion that is payable to the State Education Fund; .26/$1,000 of construction.

05.00 PROPERTY ACCESS

05.01 The Contractor shall take all proper precautions to protect from injury or unnecessary interference, and provide proper means of access to abutting property where the existing access is cut off by the Contractor.

05.02 The Contractor shall take all proper precautions to protect persons from injury or unnecessary inconvenience and leave an unobstructed way along the public and private places for travelers, vehicles, and access to hydrants.

05.03 The Contractor shall make arrangements with the adjacent property owners for such trespass as he may reasonably anticipate in the performance of the work. All such arrangements shall be reported, in writing, to the Engineer.

05.04 Construction shall be protected from the public and patrons accessing the park. Town staff shall be allowed to enter at any time to start up the bath house for the season. Periodic intermittent service interruptions will need to be coordinated with the Town in advance.

06.00 PROTECTION OF THE PUBLIC AND OF WORK AND PROPERTY

06.01 The Contractor shall continuously maintain adequate protection of all work from damage, and shall take all reasonable precautions to protect the Town from injury or loss arising in connection with the Contract.

06.02 The Contractor shall adequately protect adjacent private and public property as provided by law and the Contract Documents.

06.03 The Contractor shall make good any damage, injury, or loss of his work and to the property of the Town resulting from lack of reasonable protective precautions.

6.04 Contractor shall photograph all existing conditions prior to construction and submit to the Town for reference. If any existing conditions are damaged during construction as a result of contractor neglect, the contractor shall repair these, as directed by the engineer at no cost to the Town.

07.00 EXISTING IMPROVEMENTS

07.01 The Contractor shall conduct his work so as to minimize damage to existing improvements. Except where specifically stated otherwise in the specifications, drawings, or as directed by the Engineer, it will be the responsibility of the Contractor to restore to their original condition, as near as practical, all improvements on public or private property. This shall include:

a. Property within and adjacent to the side of installation such as shrubs, walks, driveways, fences, etc.

b. Utility mains, ducts, poles, and services. The Contractor is hereby notified that utilities, if/where shown on the plans, are at approximate locations. These locations are subject to possible errors in the source of information and errors in transcription. The Contractor shall make certain of the exact location of all mains, ducts, poles, and services prior to excavation.

08.00 SEPARATE CONTRACTS

08.01 The Engineer reserves the right to let other contracts in connection with this work. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs. Wherever work being done by the Town of Glastonbury forces or by other contractors is contiguous to work covered by this Contract, the

respective rights of the various interests involved shall be established by the Engineer to secure the completion of the various portions of the work.

09.00 INSPECTION OF WORK

09.01 The Town shall provide sufficient personnel for the inspection of the work.

09.02 The Engineer shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for such access and for inspection.

09.03 If the specifications or the Engineer's instructions require any work to be specially tested or approved, the Contractor shall give the Engineer timely notice of its readiness for inspection and, if the inspection is by another authority other than the Engineer, of the date fixed for such inspection. Inspections by the Engineer shall be made promptly. If any work should be covered up without approval or consent of the Engineer, it must, if required by the Engineer, be uncovered for examination and properly restored at the Contractor's expense.

09.04 Reinspection of any work may be ordered by the Engineer. If such work is found to be in accordance with the Contract Documents, the Town shall pay the cost of reinspection and replacement. If such work is not in accordance with the Contract Documents, the Contractor shall pay such cost.

10.00 RIGHT TO INCREASE OR DECREASE WORK

10.01 The Town shall have the right to increase or decrease the amount of work herein specified as may be required.

11.00 RIGHT OF ENGINEER TO STOP WORK FOR WEATHER CONDITIONS

11.01 Should the work, in the opinion of the Engineer, be in danger by reason of inclemency of weather, or could not be finished in time to prevent such danger, the Contractor shall cease operations upon order of the Engineer, and shall not resume them until ordered to do so by the Engineer when the weather conditions are favorable. The Contractor shall, upon such orders, discontinue work, remove all materials or appliances for or in use upon the work, and place the building in proper condition for use by the Town during the time the work is suspended as herein provided, without additional cost to the Town.

12.00 CONTRACTOR TO BE RESPONSIBLE FOR IMPERFECT WORK OR MATERIALS

12.01 Any faithful work or imperfect material that may be discovered before the acceptance and the payment of the work shall be corrected upon the order of the Engineer. The acceptance and payment of the work does not in any manner relieve the Contractor of his obligation to construct work in the proper manner and the use of materials herein specified.

13.00 TOWN MAY NOTIFY CONTRACTOR IF WORK IS NOT CARRIED ON SATISFACTORILY

13.01 If, in the opinion of the Engineer, the Contractor is not proceeding with the work at a sufficient rate of progress so as to finish in the time specified, or has abandoned said work, or is not complying with the terms and stipulations or the Contract and specifications, the Engineer may serve notice on the Contractor to adopt such methods as will ensure the completion of the work in the time specified.

13.02 If, within five days after the Engineer has notified the Contractor that his work is not being carried on satisfactorily as before mentioned, the Engineer shall have the right to annul the Contract and manage the work under the direction of the Engineer, or re-let, for the very best interest of the Town as a new contract, the work under said new Contract shall be considered the responsibility of the defaulting Contractor.

13.03 Additional costs incurred over and above the original Contract shall be borne by the Performance Bond.

14.00 DEDUCTIONS FOR UNCORRECTED WORK

14.01 If the Engineer deems it inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made therefor.

14.02 The Contractor shall promptly remove from the premises all materials condemned by the Engineer as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute his own work in accordance with the Contract and without expense to the Town, and shall bear the expense of making good all work by other contractors destroyed or damaged by such removal or replacement.

14.03 If the Contractor does not remove such condemned work and materials as promptly as possible after written notice, the Engineer may remove them and store the materials at the expense of the Contractor.

15.00 CLEANING UP

15.01 The Contractor must remove all debris of every description as the work progresses and leave the surroundings in a neat and orderly condition to the satisfaction of the Engineer.

15.02 Upon completion, and before acceptance and final payment, the Contractor shall remove from the site all equipment, forms, surplus material, rubbish and miscellaneous debris and leave the site in a neat and presentable condition.

15.03 Contractor shall protect the existing parking lot and clean up any washout concrete that occurs during construction.

16.00 ROYALTIES AND PATENTS

16.01 The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the Town of Glastonbury harmless from loss on account thereof, except that the Town of Glastonbury shall be responsible for all such loss when a particular manufacturer, product, or process is specified by the Town of Glastonbury.

17.00 ERRORS OR CONFLICT IN DRAWINGS AND SPECIFICATIONS

17.01 The Contractor shall immediately notify the Owner/Engineer should he find any errors or conflicts in the contract documents. The Owner/Engineer shall render his interpretation or instruction in writing on the items as soon as possible.

17.02 Any work undertaken by the Contractor containing possible errors or conflicts will be done at his own risk unless he has received prior written approval from the Owner/Engineer.

17.03 The Contractor shall be responsible for estimating and supplying all quantities, and where clarification or additional information is required, a request in writing to the Owner/Engineer shall be made. No extra charge or compensation will be allowed the Contractor unless there is a change in scope or dimension of the project resulting in need for extra material, equipment and/or labor. Said differences are to be handled under Article 18.

18.00 EXTRA WORK AND EXTRA COST

18.01 The Owner, without invalidating the contract documents, may order extra work or make changes by altering, adding to or deducting from the work, the contract price being adjusted accordingly. All such work shall be executed under the conditions of the original contract except that any claim of extension of time caused thereby shall be adjusted at the time of ordering the change.

18.02 No extra work or change shall be performed unless in pursuance of a written order from the Owner/Engineer, with the agreed price prior to the commencement of the work, and no claim for an addition to the contract price shall be valid unless so ordered.

18.03 The value of any such work or change shall be determined, in one or more of the following ways:

a) By estimate and acceptance on a lump sum.
b) By unit prices named in the contract or subsequently agreed upon.
c) By cost and percentage or by cost and a final fee.

19.00 SUBSTITUTIONS

19.01 The Contractor shall use materials as specified unless material list is of an open nature. Material other than specified will be permitted only after written application, including four (4) copies of specifications, is made by the Contractor and written approval received from the Engineer or Owner.

The material installed in the job site shall be new and of the quality specified.

The manufacturer's recommendation shall be followed for the installation of all equipment.

20.00 PRODUCT SUBMITTALS

20.01 Prior to ordering materials, the Contractor shall submit submittals as specified in the detailed specification sections. Three (3) copies of the submittals shall be forwarded to the Engineer for review and approval.

20.02 Submittals shall indicate specification Section for each product. Submittals not containing all the required information shall be returned to the contractor for re-submittal.

21.00 OWNER'S ACCEPTANCE

21.01 Within seven (7) days of the Contractor's notification that the installation is substantially complete, the Owner's authorized representative shall inspect the installation. The Owner, with the Contractor, shall take necessary steps to inspect the installation. Upon completion of the inspection, the Owner or the Owner's authorized representative may either accept the work outright or prepare a "Punch List" that upon completion by the Contractor and acceptance by the Owner will signify final acceptance provided that all other applicable terms and provisions of the Contract have been completed to the Owner's satisfaction.

22.00 RESPONSIBILITY FOR MAINTENANCE

22.01 It will be the Contractor's responsibility to maintain the work as specified in the detailed specifications during the warranty period.

23.00 SERVICE BY THE CONTRACTOR

23.01 The Contractor shall maintain the work as specified during the warranty period.

24.00 WARRANTY

24.01 The guarantee shall be as specified in the respective sections of the specification.

24.02 The Contractor shall be responsible for the repair and/or replacement of all defective work and materials. All repair work shall be completed in a timely fashion.

24.04 Should the Contractor not respond promptly, the Owner may take any action he deems necessary to repair the defect and prevent further damage to his property, including the hiring of another contractor, or the repairing of such a defect with material supplied by the Contractor. In this event, the Contractor shall be liable for expenses incurred and property damages suffered by the Owner.

01.00 NOTICE TO CONTRACTOR

01.01 Intent of Contract: The intent of the Contract is to prescribe a complete work or improvement that the Contractor undertakes to do, in full compliance with the specifications, plans, special provisions, proposal, and Contract. The Contractor shall perform all work in close conformity with the lines, grades, typical cross-sections, dimensions, and other data shown on the plans or as modified by written orders, including the furnishing of all materials, implements, machinery, equipment, tools, supplies, transportation, labor, and all other things necessary to the satisfactory prosecution and completion of the project.

02.00 COMMUNICATIONS

02.01 All notices, demands, requests, instructions, approvals, proposals, and claims must be in writing.

02.02 Any notice to, or demand upon, the Contractor shall be sufficiently given if delivered at the office of the Contractor stated on the signature page of the Agreement (or at such other office as the Contractor may, from time to time, designate) in a sealed, postage-prepaid envelope or delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office.

02.03 All papers required to be delivered to the Town shall, unless otherwise specified in writing to the Contractor, be delivered to the Director of Parks and Recreation, 2155 Main Street, Glastonbury, CT 06033, and any notice to, or demand upon, the Town shall be delivered at the above address in a sealed, postage-prepaid envelope or delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office or to such other representatives of the Town, or to such other address as the Town may subsequently specify in writing to the Contractor for such purpose.

02.04 Any such notice shall be deemed to have been given as of the time of actual delivery or, in case of mailing, when the same should have been received in due course of post or, in the case of telegrams, at the time of actual receipt, as the case may be.

03.00 INSURANCE

03.01 The Bidder shall, at its own expense and cost, obtain and keep in force during the entire duration of the Project or Work the following insurance coverage covering the Bidder and all of its agents, employees and sub-contractors and other providers of services and shall name the **Town of Glastonbury and its employees and agents as an Additional Insured** on a primary and non-contributory basis to the Bidders Commercial General Liability, Automobile Liability policies, and Excess Liability Follow Form.. **These requirements shall be clearly stated in the remarks section on the Bidders Certificate of Insurance.** Insurance shall be written with insurance carriers approved in the State of Connecticut and with a minimum Best's Rating of A-VIII. In addition, all carriers are subject to approval by the Town. Minimum Limits and requirements are stated below:

a. Worker's Compensation Insurance:

- Statutory Coverage
- Employer's Liability
- $1,000,000 each accident/$1,000,000 disease-policy limit/$1,000,000 disease each employee
- A Waiver of Subrogation shall be provided in favor of the Town of Glastonbury and its employees and agents.

b. Commercial General Liability:

- Including Premises and Operations, Products and Completed Operations, Personal and Advertising Injury, Contractual Liability and Independent Contractors
- Limits of Liability for Bodily Injury and Property Damage
  Each Occurrence: $1,000,000
  Aggregate: $2,000,000
  (The Aggregate Limit shall apply separately to each job.)
- A Waiver of Subrogation shall be provided in favor of the Town of Glastonbury and its employees and agents.

c. Automobile Insurance:

- Including all owned, hired, borrowed, and non-owned vehicle
- Limit of Liability for Bodily Injury and Property Damage
  Per Accident: $1,000,000
- A Waiver of Subrogation shall be provided in favor of the Town of Glastonbury and its employees and agents.

d. Umbrella of Excess Liability:

- Limit of Liability Each Occurrence $2,000,000
  Aggregate $2,000,000

03.02 The Bidder shall direct its Insurer to provide a Certificate of Insurance to the Town before any work is performed. The Contractor shall be responsible to notify the Town 30 days in advance with written notice of cancellation or non-renewal. The Certificate shall evidence all required coverage. The Bidder shall provide the Town copies of any such insurance policies upon request.

03.03 INDEMNIFICATION: To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Town and its consultants, agents, and employees from and against all claims, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, attorneys and other professionals and court and arbitration costs) to the extent arising out of or resulting from the performance of the Contractor's work, provided that such claim, damage, loss or expense is caused in whole or in part by any negligent act or omission by the Contractor, or breach of its obligations herein or by any person or organization directly or indirectly

employed or engaged by the Contractor to perform or furnish either of the services, or anyone for whose acts the Contractor may be liable.

04.00 WORK BY OTHERS

05.01 Private utilities, contractors, developers or other parties may be expected to be working within the Contract area during this Contract. It shall be the responsibility of the Contractor to coordinate his work with the work being done by others in order that the construction shall proceed in an efficient and logical manner. The Contractor shall have no claim or claims whatever against the Town, the Engineer, or other parties due to delays or other reasons caused by the work by others or his failure to coordinate such work.

05.00 CONTRACTOR'S WORK AND STORAGE AREA

05.01 The Contractor shall contact the Town to determine if any specific locations will be designated, or gain its approval prior to using any area for storage of equipment, materials and trailers during the period of this Contract. The Contractor shall confine his work/storage area to the limits as designated or approved and shall be responsible for the security of the work/storage area. Upon completion of the Contract, the Contractor shall remove all equipment and materials, except as otherwise specified, and restore the site to its original condition as approved by the Engineer and at no cost to the Town.

06.00 DISPOSAL AREA

06.01 The Tryon Street Bulky Waste Facility will be available to the Contractor, at no charge, for disposal of materials that are accepted at that facility. Waste disposal guidelines for the Bulky Waste facility are published on the Town web site at the address shown below. Each bidder shall have reviewed and understand these guidelines prior to submitting a bid for the project.

http://www.glastonbury-ct.gov/Modules/ShowDocument.aspx?documentid=699

Acceptable materials generally include such materials as brush, stumps, demolition materials, and excess excavated earth materials. Unacceptable materials generally include such items as carpet, appliances, upholstered furniture; hazardous wastes such as pesticides, oil based paints and thinners; or other wastes as designated by the State Department of Environmental Protection. Demolition material cannot contain asbestos or other hazardous materials.

The Contractor shall obtain a disposal area for all other unsuitable or surplus materials at no cost to the Town.

07.00 DUST CONTROL

07.01 During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities so as to minimize the creation and dispersion of dust. If the Engineer decides that it is necessary to use water or calcium chloride for more effective dust control, the Contractor shall furnish and spread the material, as directed, without additional compensation.

08.00 MAINTENANCE / GUARANTEE PERIOD

08.01 The Contractor shall be held responsible to the Town for maintenance for a minimum of one-year following completion of all work under this Contract with respect to defects, settlements, etc., unless specified otherwise in the Technical Specifications.

09.00 PROTECTION OF EXISTING UTILITIES

09.01 Prior to opening an excavation, effort shall be made to determine whether underground installations, (i.e., sewer, water, fuel, electric lines, etc.) will be encountered and, if so, where such underground installations are located. Before starting any excavation, the Contractor shall submit to the Engineer plans or details showing the proposed method the Contractor will use to support and protect all existing utilities during construction. The furnishing of such plans and details shall not serve to relieve the Contractor of any responsibility for the proper conduct of the work.

09.02 When the excavation approaches the estimated location of such an installation, the exact location shall be determined by careful probing or hand digging, and when it is uncovered, proper supports shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of actual excavation.

09.03 There will be no extra payment for submitting plans or details for supporting and protecting all existing utilities during construction.

10.00 TIME FOR COMPLETION/NOTICE TO PROCEED

10.01 It is the Town's intention to provide the Contractor with access to the site for construction operations on notice to proceed. **It is the intention of the Town to have the Contractor achieve substantial completion of the work no later than June 1, 2019.** As such, the Town will schedule a pre-construction meeting immediately upon award of this contract and will issue a Notice to Proceed at this meeting. Contractors who submit a bid for this project shall be prepared to respond to this schedule, and include all costs related to this schedule in their bid.

Within ten (10) business days after the date of the Notice of Award, the Contractor must provide the appropriate bonds and insurance certificates to the Town Purchasing Agent and must be issued a Notice to Proceed by Purchase Order for the Project prior to initiating any work.

10.02 Scheduling the work required under this contract requires close coordination with other trades, contractors, and the Owner. The Contractor needs to be prepared to fit work required under this contract within the logical and orderly progression of the work on the entire project. Progression of the project may also require the Contractor to complete work required under this contract in multiple phases, as a phased approach to construction is envisioned. No additional costs will be paid by the Owner as a result of phasing or multiple mobilizations.

10.03 Because it is the intention of the Town to ensure a fully operational pool facility effective June 2, 2019, it is imperative that substantial completion of the work be achieved on or before June 1, 2019.

11.00 SCHEDULE OF DRAWINGS

11.01 The Contractor is hereby alerted that the plan set is entitled "Town of Glastonbury, Grange Swimming Pool Repairs, 500 Hopewell Road, Glastonbury, CT; February 1, 2019".

12.00 CHANGES IN THE WORK

12.01 The Town reserves the right to perform portions of the work in connection with these plans and specifications. The reduction in the work to be performed by the Contractor shall be made without invalidating the Contract. Whenever work is done by the Town contiguous to other work covered by this Contract, the Contractor shall provide reasonable opportunity for the execution of the work and shall properly coordinate his work with that of the Town.

13.00 BUILDING USE AND OCCUPANCY

The property will be closed throughout the construction period. Construction sequencing will need to consider occupant protection of the site.

Contractor parking and laydown areas will also need to be coordinated with the Town in advance at the pre-construction meeting.

14.00 WORK HOURS

Work is generally permitted Monday-Friday, 7:00 a.m. – 3:30 p.m. Hours beyond 3:30 p.m. and/or on Saturdays can be scheduled in advance with the Town.

TOWN OF GLASTONBURY * 2155 MAIN STREET * GLASTONURY * CT

BID / PROPOSAL NO: **GL-2019-28** **DATE DUE:** **03-05-19**

DATE ADVERTISED: **02-18-19** **TIME DUE:** **11:00 AM**

NAME OF PROJECT: **GRANGE SWIMMING POOL REPAIRS**

In compliance with this Invitation to Bid, the Bidder hereby proposes to provide goods and/or services as per this solicitation in strict accordance with the Bid Documents, within the time set forth therein, and at the prices submitted with their bid response.

It is the responsibility of the Bidder to clearly mark the outside of the bid envelope with the Bid Number, Date and Time of Bid Opening, and it also **THE RESPONSIBILITY OF THE BIDDER TO CHECK THE TOWN'S WEBSITE BEFORE SUBMITTING BID FOR ADDENDA POSTED PRIOR TO BID OPENING.**

THE BIDDER ACKNOWLEDGES RECEIPT OF THE FOLLOWING ADDENDA AS REQUIRED:

Addendum #1 _____ (Initial/Date) Addendum #2 _____ (Initial/Date) Addendum #3 _____(Initial/Date)

OTHER ITEMS REQUIRED WITH SUBMISSION OF BID PROPOSAL:

The following bid checklist describes items required for inclusion with the above-referenced bid proposal package. It is provided for the convenience of the bidders and, therefore, should not be assumed to be a complete list.

_____ 1. Bid Bond as per Section 10 of the Information for Bidders (10% of total bid amount).

_____ 2. Disclosure of Past and Pending Mediation, Arbitration, and Litigation cases against the Bidder or its Principals as per Section 18 of the Information for Bidders.

_____ 3. Included Qualifications Statement as per Section 25 of the Information for Bidders.

_____ 4. Checked Town web site for Addenda and acknowledged Addenda on page BP-1.

_____ 5. Acknowledgement of Code of Ethics and Non-Collusion Affidavit on page BP-2.

_____ 6. Included signed statement regarding Compliance with Town Ordinance Prohibiting Natural Gas Waste & Oil Waste From Natural Gas Extraction Activities or Oil Extraction Activities per Section 23 of the Information for Bidders.

_____ 7. Clearly marked envelope with Bid Number, Date, Time of opening, Bidder's Company Name and address.

Grange Swimming Pool Repairs
BID PROPOSAL

TOTAL LUMP SUM BID AMOUNT

Furnish and install GRANGE SWIMMING POOL REPAIRS as specified in the Plans and Specifications for Bid GL-2019-28.

$_____
(Numeric Amount)

_____
(Written Bid Amount)

Unit Price Amounts:

1. **Deck Repairs. Contractor shall provide up to 100 square foot in base contract. This shall include saw cutting, chipping, and Cementous patch.**
   Any area beyond 100 SF shall be valued at $ _____ per square foot.
   (Numerical)

2. **Leak Repairs. Contractor shall provide up to (4) leak fixes in base contract. This shall include Slab removal, excavation, piping repairs, and slab repairs.**
   Any leak beyond (4) shall be valued at $ _____ per leak.
   (Numerical)

NON-COLLUSION AFFIDAVIT:
By submission of this bid, the Bidder certifies, and in the case of a joint bid each party thereto certifies as to their own organization that this bid has been arrived at independently without consultation, communication, or agreement as to any matter relating to this bid with any other Bidder or with any competitor.

CODE OF ETHICS:
I/We have reviewed a copy of the Town of Glastonbury's Code of Ethics and agree to submit a Consultant Acknowledgement Form if I/We are selected. Yes_____ No_____**

***Bidder is advised that effective August 1, 2003, the Town of Glastonbury cannot consider any bid or proposal where the Bidder has not agreed to the above statement.**

Respectfully submitted:

Type or Print Name of Individual	**Doing Business as (Trade Name)**
Signature of Individual	**Street Address**
Title	**City, State, Zip Code**
Date	**Telephone Number/Fax Number**
E-Mail Address	**SS# or TIN#**

(Seal – If bid is by a Corporation)
Attest

ATTACHMENT A:
STATE WAGE RATES

Project: Grange Swimming Pool Repair

Minimum Rates and Classifications for Heavy/Highway Construction

ID#: **H** 25684

Connecticut Department of Labor
Wage and Workplace Standards Division

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number:

Project Town: Glastonbury

FAP Number:

State Number:

Project: Grange Swimming Pool Repair

CLASSIFICATION	Hourly Rate	Benefits
01) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters. **See Laborers Group 5 and 7**		
1) Boilermaker	33.79	34% + 8.96
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	33.48	31.66
2) Carpenters, Piledrivermen	32.60	25.34

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Project: Grange Swimming Pool Repair

2a) Diver Tenders	32.60	25.34
3) Divers	41.06	25.34
03a) Millwrights	33.14	25.74
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	49.75	21.05
4a) Painters: Brush and Roller	33.62	21.05
4b) Painters: Spray Only	36.62	21.05
4c) Painters: Steel Only	35.62	21.05

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4d) Painters: Blast and Spray	36.62	21.05
4e) Painters: Tanks, Tower and Swing	35.62	21.05
5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	40.00	25.97+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	35.47	35.14 + a
7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9)	42.62	31.21
----LABORERS---- -		
8) Group 1: Laborer (Unskilled), Common or General, acetylene burner, concrete specialist	30.05	20.10

9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	30.30	20.10
10) Group 3: Pipelayers	30.55	20.10
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators	30.55	20.10
12) Group 5: Toxic waste removal (non-mechanical systems)	32.05	20.10
13) Group 6: Blasters	31.80	20.10
Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	31.05	20.10
Group 8: Traffic control signalmen	16.00	20.10

Group 9: Hydraulic Drills	29.30	18.90
----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----		
13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	32.22	20.10 + a
13b) Brakemen, Trackmen	31.28	20.10 + a
----CLEANING, CONCRETE AND CAULKING TUNNEL----		
14) Concrete Workers, Form Movers, and Strippers	31.28	20.10 + a
15) Form Erectors	31.60	20.10 + a

Project: Grange Swimming Pool Repair

----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		
16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers	31.28	20.10 + a
17) Laborers Topside, Cage Tenders, Bellman	31.17	20.10 + a
18) Miners	32.22	20.10 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----		
18a) Blaster	38.53	20.10 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	38.34	20.10 + a

20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	36.41	20.10 + a
21) Mucking Machine Operator	39.11	20.10 + a
----TRUCK DRIVERS----(*see note below)		
Two axle trucks	29.13	23.33 + a
Three axle trucks; two axle ready mix	29.23	23.33 + a
Three axle ready mix	29.28	23.33 + a
Four axle trucks, heavy duty trailer (up to 40 tons)	29.33	23.33 + a

Four axle ready-mix	29.38	23.33 + a
Heavy duty trailer (40 tons and over)	29.58	23.33 + a
Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	29.38	23.33 + a
----POWER EQUIPMENT OPERATORS----		
Group 1: Crane handling or erecting structural steel or stone, hoisting engineer (2 drums or over), front end loader (7 cubic yards or over), Work Boat 26 ft. & Over, Tunnel Boring Machines. (Trade License Required)	39.55	24.30 + a
Group 2: Cranes (100 ton rate capacity and over); Excavator over 2 cubic yards; Piledriver ($3.00 premium when operator controls hammer); Bauer Drill/Caisson. (Trade License Required)	39.23	24.30 + a
Group 3: Excavator/Backhoe under 2 cubic yards; Cranes (under 100 ton rated capacity), Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	38.49	24.30 + a

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Group 4: Trenching Machines; Lighter Derrick; Concrete Finishing Machine; CMI Machine or Similar; Koehring Loader (Skooper)	38.10	24.30 + a
Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" Mandrell)	37.51	24.30 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	37.51	24.30 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	37.20	24.30 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and Under Mandrel).	36.86	24.30 + a
Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine.	36.46	24.30 + a
Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder).	36.03	24.30 + a

Project: Grange Swimming Pool Repair

Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc.	33.99	24.30 + a
Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment.	33.99	24.30 + a
Group 12: Wellpoint Operator.	33.93	24.30 + a
Group 13: Compressor Battery Operator.	33.35	24.30 + a
Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain).	32.21	24.30 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	31.80	24.30 + a
Group 16: Maintenance Engineer/Oiler	31.15	24.30 + a

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Group 17: Portable asphalt plant operator; portable crusher plant operator; portable concrete plant operator.	35.46	24.30 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	33.04	24.30 + a

**NOTE: SEE BELOW

----LINE CONSTRUCTION----(Railroad Construction and Maintenance)----

20) Lineman, Cable Splicer, Technician	48.19	6.5% + 22.00
21) Heavy Equipment Operator	42.26	6.5% + 19.88
22) Equipment Operator, Tractor Trailer Driver, Material Men	40.96	6.5% + 19.21

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23) Driver Groundmen	26.50	6.5% + 9.00
23a) Truck Driver	40.96	6.5% + 17.76
----LINE CONSTRUCTION----		
24) Driver Groundmen	30.92	6.5% + 9.70
25) Groundmen	22.67	6.5% + 6.20
26) Heavy Equipment Operators	37.10	6.5% + 10.70
27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20

Project: Grange Swimming Pool Repair

28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45

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Welders: Rate for craft to which welding is incidental.

**Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.*

***Note: Hazardous waste premium $3.00 per hour over classified rate*

ALL Cranes: When crane operator is operating equipment that requires a fully licensed crane operator to operate he receives an extra $4.00 premium in addition to the hourly wage rate and benefit contributions:

1) Crane handling or erecting structural steel or stone; hoisting engineer (2 drums or over)

2) Cranes (100 ton rate capacity and over) Bauer Drill/Caisson

3) Cranes (under 100 ton rated capacity)

Crane with 150 ft. boom (including jib) - $1.50 extra
Crane with 200 ft. boom (including jib) - $2.50 extra
Crane with 250 ft. boom (including jib) - $5.00 extra
Crane with 300 ft. boom (including jib) - $7.00 extra
Crane with 400 ft. boom (including jib) - $10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

~~Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work ~~

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

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Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

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SECTION 02 41 19

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY:

A. Provide selective demolition of existing swimming pool, swimming pool deck, and minor renovations inside the equipment building.

B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 DEFINITIONS:

A. Remove: Detach items from existing construction and legally dispose of them off-site.

B. Removed and Reinstalled: Existing items removed and reinstalled in their original locations after selective demolition.

C. Existing to Remain: Existing items of construction that are not to be removed and salvaged, or removed and reinstalled.

1.03 QUALITY ASSURANCE:

A. Codes and Regulations: Comply with governing codes and regulations. Use experienced workers

B. Experience: Contractor or individuals performing the selective demolition shall have experience in selective demolition of historical projects in similar nature. Contractor shall submit three projects, successfully completed in the last five years.

1.04 PROJECT CONDITIONS:

A. Occupancy: Immediate areas of work will be occupied during selective demolition. The facility employees may occupy adjacent areas outside of Work limit. Coordinate demolition schedule with Owner activities.

B. Existing Conditions: No responsibility for items to be demolished will be assumed by the Owner.

PART 2 - PRODUCTS

2.01 DEMOLITION APPLICATIONS:

A. Selective Pool Demolition:

1. Remove and Dispose (R&D) the below item:

a. Interior Pool Plaster Finish

b. Interior Pool Tile Finish

c. Interior Pool Caulking

d. Caulking on the coping stones, found on pool deck

e. Coping Stones

f. Existing Skimmers

g. Existing Main Drains

h. Selective areas of pool deck

i. Selective area of pool floor

j. Selective areas of existing filter building.

PART 3 - EXECUTION

3.01 SELECTIVE DEMOLITION:

A. Demolition Operations: Do not damage building elements and improvements indicated to remain. Utilities: Locate, identify, disconnect, and seal or cap off utilities in buildings to be demolished.

B. Occupied Spaces: Do not obstruct occupied or used spaces or facilities without the written permission of the Owner and the authorities having jurisdiction. Do not interrupt utilities serving occupied or used facilities without the written permission of the Owner and authorities having jurisdiction. If necessary, provide temporary utilities.

C. Operations: Cease operations if public safety or remaining structures are endangered. Perform temporary corrective measures until operations can be continued properly.

D. Security: Provide adequate protection against accidental trespassing. Secure project after work hours.

E. Restoration: Restore finishes of patched areas and any damaged adjacent construction and finishes.

END OF SECTION

SECTION 03 01 30.62

REPAIR OF EXISTING CONCRETE STRUCTURES

PART 1 GENERAL

1.01 WORK INCLUDED:

Furnish all labor, materials, equipment and incidentals required to repair deteriorated areas of existing concrete structures including the sealing of existing joints as required by the Engineer in the field and as specified herein.

1.02 RELATED WORK:

A. Section 01 33 23, SUBMITTALS

B. Division 03, CONCRETE

C. Division 31, EARTHWORK

1.03 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING

A. Prior to shipment, the Contractor shall submit to the Engineer for review, six (6) copies of each of the following: manufacturer's technical literature for epoxy bonding agent, adhesive anchor system, repair mortar, polyurethane chemical grout, and strip and seal system. The Contractor shall include manufacturer’s installation and or application instructions in the submittal.

B. A complete, easily readable functional description of the proposed product.

C. Upon completion of installation, the results of the field and acceptance tests as specified under this section of the specification shall be submitted to the Engineer.

D. Furnish written certification from the manufacturer's representative of the proper installation and use of each product.

1.04 REFERENCES:

A. The following standards form a part of this specification and indicate the minimum standards required:

American Society for Testing and Materials (ASTM)

ASTM C881 -Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.

ASTM C882 -Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear.

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE:

A. Do not begin repair work until authorized by the Engineer to do so.

B. When removing deteriorated concrete erect barriers or other protective devices to prevent damage to the structures beyond the limits of new work, protect personnel, control dust and prevent damage by falling or flying debris.

C. Unless otherwise indicated or specified, saw cut the limits of all concrete repairs.

D. Furnish a notarized certificate stating that the materials to be provided meet the requirements of this Section and have the manufacturer's current printed literature on the specified product.

1.06 MANUFACTURER'S QUALIFICATIONS:

A. Consideration shall be given only to well-established and reliable manufacturers who are regularly engaged in such work and thoroughly experienced in the design and manufacture of said systems. The manufacturer shall certify a minimum of ten (10) years of experience in the manufacture and use of the products specified under this section as evidence of meeting the experience requirement.

B. The system described herein and shown on the drawings establishes a standard of required type, function and quality to be met by any proposed substitute or "or-equal" systems. All "or-equal" systems shall meet the exact system configuration and operational function as shown on the drawings and specified herein. No "or-equal" system shall be considered by the Engineer unless written request for approval has been submitted for and approved by the Engineer in writing. The burden of proof of merit for the proposed "or-equal" systems is upon the Contractor and the proposed equipment manufacturer. The Engineer's decision of approval or disapproval of a proposed item shall be final. If the Engineer approves any "or-equal" item, the Contractor shall indemnify, hold harmless and defend both the Owner and the Engineer from any claims associated with the "or-equal" systems. Approval of "or-equal" systems does not relieve the Contractor of any requirements specified herein, called for by the Engineer or shown on the drawings.

1.07 DELIVERY, STORAGE AND HANDLING:

Deliver products in original, unopened containers clearly labeled with the manufacturer's name, product identification, batch numbers and printed instructions. Storage and condition of products shall be as recommended by the manufacturer.

1.08 WARRANTY:

A. The manufacturer shall warranty, in writing, that the products supplied under this Section fully meet the criteria specified herein, and shall further warranty that the products are free from all defects in materials and workmanship.

B. The manufacturer's warrantees from defects shall contain a provision that the manufacturer shall repair or replace any defects, to the satisfaction of and at no additional cost to the Owner, for a period of twelve (12) months from the date of Substantial Completion.

PART 2 – Products

2.01 PATCHING MATERIALS:

A. Materials shall comply with this Section and any Federal, State or local VOC limitations.

B. Epoxy Bonding Agent

Provide a two-component, solvent-free, asbestos free moisture insensitive epoxy resin material used to bond plastic concrete to hardened concrete where indicated on the Drawings or directed by the Engineer. The Epoxy bonding agent shall comply with the requirements of ASTM C881, Type 11, Grade 2. Epoxy bonding agent shall be Sikadur 32, Hi-Mod by Sika Corporation, Lyndhurst, NJ; Epoxy Adhesive CR631 by Sto Concrete Restoration Division, Amherst, MA; Euco 452MV by Euclid Chemical Co., Cleveland, OH, or equal.

C. Repair Mortar

1. Repair mortar shall be a two-component, polymer-modified, cementitious, fast-setting, trowel grade, non-sag, structural repair mortar suitable for use on horizontal, vertical and overhead surfaces, on grade, above, and below grade on concrete and mortar.

2. Material

a. The polymer modified cementitious system shall consist of a factory pre-proportioned two-component system whose components conform to the following requirements:

3. Component A shall be a liquid polymer emulsion of an acrylic copolymer base and additives. This acrylic copolymer shall have the following properties:

i. Minimum film forming temperature approximately 68 degrees F
ii. Tea- Strength approximately 990 to 1,420 psi

iii. Elongation at break 500 to 900 percent
iv. Particle Size Range Less than 0.1 micron

4. Component B shall be a blend of selected Portland cements, specially graded aggregates, organic accelerator and admixtures for controlling setting time, water reducers for workability and a corrosion inhibitor.

5. The component ratio A:B shall be 1:7.2 by weight for horizontal repairs and 1:5.2 by weight for vertical and overhead repairs. The system shall not contain chlorides, nitrates, added gypsum, added lime, or high alumina cements. The system shall be non-combustible, either before or after cure.

a. Typical Properties of Mixed Components

1. Application Time (Working Time) -15 minutes after combining components
2. Finishing Time – 20 to 60 minutes after combining components
3. Color – Concrete Gray

b. Typical Properties of Cured Material

1. Splitting Tensile Strength (ASTM C496) -750 psi minimum at 28 days
2. Bond Strength.(ASTM C882) -2,200 psi minimum at 28 days
3. Thermal Compatibility (ASTM C884) -passes test
4. Compressive Strength (ASTM C109) -1 day, 3,000 psi minimum 7 days, 5,500 psi minimum 28 days, 7,000 psi minimum
5. Flexural Strength (ASTM C293) -28 days, 2,000 psi minimum
6. This system shall not produce a vapor barrier.
7. This system shall be thoroughly compatible with concrete.
8. For horizontal repairs greater than 1-inch in thickness 3/8-inch coarse aggregate may be added. Do not use limestone aggregate.

c. Approved manufacturers include:

1. Repair mortar for horizontal surfaces shall be SikaTop 122 Plus by Sika Corporation, Lyndhurst, NJ or equal.

2. Repair mortar for vertical and overhead surfaces shall be SikaTop 123 Plus by Sika Corporation, Lyndhurst, NJ or equal.

2.02 BACKER RODS:

A. Open Cell Backer Rod -Extruded, open cell polyurethane foam. Diameter shall be not less than 200 percent of the joint width dimension.

B. Closed Cell Backer Rod -Extruded, nonstaining, resilient closed cell polyethylene foam, compatible with sealant. Diameter shall be not less than 25 percent greater than the joint width. Sealant shall not adhere to backer rod.

2.03 POLYURETHANE CHEMICAL GROUT:

A. General

a. The grouting compound shall be a single component, expanding, moisture reactive polyurethane grout that is designed to seal cracks and open joints in concrete. The cured chemical grout shall form a compressed closed cell urethane foam that shall completely fill the crack or joint.
b. An accelerator may be used if recommended by the approved polyurethane chemical grout manufacturer.
c. Injection packers shall be required for application of polyurethane chemical grout in existing concrete.

B. Material

a. Properties of cured material

1. Tensile Strength (ASTM D 1623): 15.5 psi minimum at 1 day. Elongation at Break – 25 percent.
2. Shear Strength (ASTM C273): 11.70 psi minimum at 1 day.
3. Shrinkage (ASTM D2126): 0 percent
4. Water Absorption (ASTM D2842): 0.09 1b/square ft
5. Density (ASTM Dl 622): 1.64 lb/cubic ft

C. Approved manufacturers include:

Sika Corporation, Lyndhurst, NJ – SilcaFix HH-LV, or equal.

PART 3 – EXECUTION

3.01 GENERAL:

A. Repair deteriorated areas of concrete and seal existing joints and cracks as required by the Engineer and as specified herein.

B. All commercial products shall be stored, mixed and applied in strict compliance with the manufacturer's recommendations and as specified herein.

C. Where concrete is repaired in the vicinity of an expansion joint or control joint, preserve the isolation between components on either side of the joint.

3.02 CONCRETE REMOVAL:

A. When removing deteriorated concrete, saw cut the limits of removal. Remove concrete such that existing concrete and reinforcing to be left in place and existing equipment in place are not damaged.

B. Remove fractured, loose, deteriorated and unsound concrete by bush hammering, chipping, high pressure water blast or other appropriate means. Remove all dirt, oil, grease and all other bond inhibiting materials from surface. Exposed reinforcing steel, reinforcing to be incorporated into repair mortar, and corroded reinforcing steel shall be treated as specified herein. Saturate existing concrete surfaces with water. Restore area to original limits or as shown using repair mortar. Comply with manufacturer's recommendations for concrete removal, surface preparation, mixing, application, finishing, and curing.

C. Repair or replace concrete specified to be left in place, which is damaged during concrete modifications as required by the Engineer at no additional cost to the Owner.

3.03 CONNECTION SURFACE PREPARATION FOR NEW CONCRETE:

A. Prepare connection surfaces as specified below for concrete areas requiring patching or repairs as indicated on the Drawings, specified herein, or as required by the Engineer.

B. Remove all loose and deteriorated materials, dirt, oil, grease, and all other bond inhibiting materials from the surface by dry mechanical means such as sandblasting, chipping or wire brushing. Uniformly roughen the concrete surface to approximately ¼-in. amplitude with pointed chipping tools. Thoroughly clean surface of loose or weakened material and dust by dry mechanical means such as sandblasting and air blasting. Irregular voids or surface stones need not be removed if they are sound, free of laitance, and firmly embedded into the parent concrete.

C. If reinforcing steel is exposed, clean it by dry mechanical means to remove all loose material, contaminants and rust as approved by the Engineer. If half of the diameter of the reinforcing steel or more is exposed, chip out a minimum of 1-in of concrete behind the steel. Do not damage reinforcing to be incorporated in new concrete while removing existing concrete.

D. Prepare concrete surfaces in accordance with the following as indicated, specified or as required by the Engineer.

    a. Method A – After the existing concrete surface at connection has been roughened and cleaned, thoroughly saturate with water and maintain saturation for a period of at least 12 hours. Brush on a 1/16-in. layer of cement and water mixed to the consistency of a heavy paste. Immediately after application of cement paste, place new concrete or grout mixture as indicated.

b. Method B – After the existing concrete surface has been roughened and cleaned, apply epoxy-bonding agent at connection surface. The field preparation and application of the epoxy-bonding agent shall comply strictly with the manufacturer's recommendations. Place new concrete or grout mixture as indicated within time constraints recommended by the manufacturer to ensure bond.

3.04 POLYURETHANE CHEMICAL GROUT:

A. Apply polyurethane chemical grout to leaking cracks, joints, and voids in existing concrete.

B. Clean concrete surfaces as required by the manufacturer of the polyurethane chemical grout.

C. The polyurethane chemical grout shall be installed through drilled-in injection ports installed as recommended by the polyurethane chemical grout manufacturer. Installation and curing of polyurethane chemical grout shall be in accordance with manufacturer's requirements.

D. Remove all excess material from the interior face of walls, floors, etc. and the exterior face of walls to the satisfaction of the Engineer.

E. Remove all injection ports and seal with grout. The repair area shall be flush with the surrounding concrete surface.

F. At completion of repairs, the Contractor, Engineer, and installers of the materials used on the repairs shall inspect the work. Any leaky joints, cracks, or voids shall be repaired in accordance with the manufacturer's instructions at no additional cost to the Owner. At the completion of the repairs, the Contractor, Engineer, and installers of the materials shall again inspect the repaired problem areas.

END OF SECTION

SECTION 03 11 00

CONCRETE FORMWORK

PART 1 - GENERAL

1.01 WORK INCLUDED:

This section of the specifications covers the furnishing and installation of forms for cast-in-place concrete.

1.02 RELATED WORK:

A. Section 03 21 00, CONCRETE REINFORCEMENT

B. Section 03 30 00, CAST-IN-PLACE CONCRETE

C. Section 03 37 13, SHOTCRETE

1.03 REFERENCES:

The following standards form a part of this specification:

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 301 Standard Specifications for Structural Concrete

ACI 347 Recommended Practices for Concrete Formwork

U.S. ARMY CORPS OF ENGINEERS (CE)

CE 03300 Cast-in-Place Concrete

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Forms for exterior and interior surfaces which will be exposed to view after the work is completed, whether such surfaces are painted or unpainted, shall be new plywood stock, steel, tempered masonite, or other materials which will provide smooth concrete surfaces without subsequent surface plastering. Plastic or plastic-faced forms shall not be used, except with the prior approval of the Engineer.

B. Form ties shall be cone type or equal, with waterstop, which leaves no metal closer than 2-inches to finished face of concrete.

C. Interior surface of the fountain basin form shall be lined with a form liner to provide a surface that reduces the visable appearance of form lines, but also to provide a rough surface that would allow the adherence of the cementitious waterproofing and plaster finish.

D. Form release agent shall be a non-staining, non-yellowing, non-toxic liquid free from kerosene and resins of the type recommended by the manufacturer of the forming system being used such as EZ strip by L&M Construction Chemicals, Omaha, NB and "Magic Kote" by Symons Corp., Des Plaines, IL or approved equal.

E. Where steel adjacent to vertical faces of forms cannot be otherwise secured, mortar doughnuts shall be used to prevent steel from lying too close to the finish vertical faces of the concrete.

PART 3 - EXECUTION

3.01 PREPARATION:

Surfaces of forms to be in contact with concrete shall be greased with nonstaining form release compound. Wetting will not be accepted as a substitute. Approval of the Engineer shall be obtained before use of coated materials or liners in lieu of form release compound, except as modified herein.

3.02 CONSTRUCTION:

A. For concrete surfaces which will be visible after completion of the structure, painted or unpainted, the type and the precise location of form ties, nails joints between form members, and any other features which will leave a visible trace in the finished concrete, will be subject to the approval of the Engineer.

B. Formwork shall be so constructed, braced, or tied that the formed surfaces of the concrete will be perfectly true, smooth, and to the dimensions shown on the drawings. All forms used for circular sections shall be true arcs as indicated on the drawings. Short chords will not be acceptable. Form line shall present an uninterrupted surface conforming to radii indicated on the drawings.

C. Forms shall be sufficiently tight to prevent leakage of mortar, and when necessary shall have temporary openings as required for thorough cleaning, and as required for introduction of concrete to avoid excessive free fall. Panels damaged in stripping or otherwise shall not be reused.

D. Unless otherwise noted on the design drawings, forms shall be filleted and chamfered at all sharp corners, and exposed edges with a 3/4-inch chamfer. Chamfer shall not be used where masonry or other material will subsequently be installed flush with one of the adjacent surfaces of the concrete. Where a wash or slope is indicated on the drawings no additional chamfer is required.

3.03 REMOVAL OF FORMS

A. Except as otherwise specifically authorized by the Engineer, forms shall not be removed before the concrete has attained a strength of at least 30 percent of the ultimate strength prescribed by the design and not before reaching the following number of day-degrees [whichever is the longer]:

Forms for	Day-Degree*
Beams and Slabs	500
Walls and vertical surfaces	200

* Day-Degree: Total number of days times average daily air temperature at surface of concrete. For example, 5 days at a daily weighted average temperature of 60 deg F equals 300 day-degrees. Temperatures below 50 deg F are not to be considered in determining Day-Degree.

B. Where beams, girder, columns, walls and similar vertical forms are adequately supported on shores, the side forms may be removed after 24 hours of cumulative curing time provided the side forms support no loads other than the lateral pressure of the plastic concrete. Cumulative curing time represents the sum of time intervals, not necessarily consecutive, during which the temperature of the air surrounding the concrete is above 50 deg. F in accordance with American Concrete Institute standards.

C. Shoring shall not be removed until the concrete has attained at least 70 percent of the specified strength and sufficient strength to support safely its own weight and the construction live loads upon it.

D. Forms shall be removed in such a manner as not to impair safety and serviceability of the structure. Concrete exposed by form removal shall have sufficient strength not to be damaged by the removal operation.

END OF SECTION

SECTION 03 21 00

CONCRETE REINFORCMENT

PART 1 - GENERAL

1.01 WORK INCLUDED:

This section of the specification covers the furnishing and installation of reinforcement for cast-in-place concrete.

1.02 RELATED WORK:

A. Section 03 11 00, CONCRETE FORMWORK

C. Section 03 30 00, CAST-IN-PLACE CONCRETE

1.03 SYSTEM DESCRIPTION:

Materials and construction shall conform to ACI 3l8 and ACI 350 unless otherwise noted on the design drawings or modified herein.

1.04 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

A. The Contractor shall furnish the Engineer with complete checked, reinforcing steel shop drawings and bar lists. Shop drawing shall include grade of steel used as well as splice lengths.

B. Mill test reports shall accompany drawings. Fabrication shall not commence until the drawings and mill test reports have been released by the Engineer.

C. When fiber reinforcement is used, contractor shall submit manufacturer's data confirming that material meets the specification.

1.05 REFERENCES:

A. The following standards form a part of these specifications:

American Concrete Institute (ACI)

ACI 3l8 Building Code Requirements for Concrete

ACI 347 Recommended Practice for Concrete Formwork

ACI 350 Environmental Engineering Concrete Structures

ACI SP-66 ACI Detailing Manual

American Society for Testing and Materials (ASTM)

ASTM A185 Standard Specification for Welded Steel Wire Fabric for Concrete Reinforcement

ASTM A497 Specification for Welded Deformed Steel Wire Fabric for Concrete Reinforcement

ASTM A6l5 Deformed Billet-Steel Bars for Concrete Reinforcement

ASTM A775 Epoxy-coated Reinforcing Steel Bars

ASTM A884 Epoxy-coated Welded Wire Fabric

American Welding Society (AWS)

AWS 12.1 Recommended Practices for Welding Reinforcing Steel, Metal Inserts and Connections in Reinforced Concrete Construction

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Steel reinforcing bars shall conform to ASTM A6l5, Grade 60, and A775 un-coated bars.

B. Welded steel wire fabric shall conform to ASTM A185 or ASTM A497 and ASTM A884 uncoated fabric. Gauge and spacing of wires shall be as indicated on the drawings.

C. Reinforcing steel shall be detailed in accordance with ACI SP-66 modified as applicable to conform to ACI 350.

D. Reinforcement shall be accurately formed to the dimensions indicated on the drawings. Bars shall be shipped to the site with bars of the same size and shape, fastened in bundles with securely wired-on metal identification tags listing both size and mark.

E. Any bar showing cracks after bending shall be discarded.

F. Steel failing to meet the requirements of this specification or the drawings will be rejected and shall be removed from the site immediately.

PART 3 - EXECUTION

3.01 STEEL INSTALLATION:

A. Before being placed in position, reinforcement shall be thoroughly cleaned of loose mill and rust scale, dirt, and other coatings (including ice), that reduce or destroy bond. When there is a delay in depositing concrete after reinforcement is in place, bars shall be reinspected and cleaned as necessary.

B. After forms have been oiled, but before concrete is placed, all steel shall be securely wired in the exact position called for, and shall be maintained in that position until all concrete is placed and compacted. Chair bars and supports shall be provided in a number and arrangement satisfactory to the Engineer.

C. Concrete blocks having a minimum bearing area of 2-inches by 2-inches and equal in quality to that specified for the slab, shall be used for supporting reinforcing bars for slabs on grade. Wood blocks, stones, brick chips, etc., shall not be used to support reinforcement.

D. Metal supports shall be of types that will not penetrate the surface of formwork or slab and which will not show through or stain surfaces that are to be exposed to view, painted or unpainted.

E. Welding of reinforcing bars will be permitted only where permission of the Engineer has been obtained in advance. Such welding shall be performed only under conditions established by the Engineer, and in accordance with AWS 12.1.

F. Reinforcement, which is to be exposed for a considerable length of time after having been placed, shall be painted with a heavy coat of cement grout, if required by the Engineer.

END OF SECTION

SECTION 03 30 00

CAST IN PLACE CONCRETE

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. This Section covers all concrete and all related items necessary to place and finish the concrete work.

B. All concrete shall be a minimum of 4000 PSI.

1.02 RELATED WORK:

A. Section 03 11 00, CONCRETE FORMWORK

B. Section 03 21 00, CONCRETE REINFORCEMENT

C. Section 31 00 00, EARTHWORK

D. Items furnished under other Sections and installed under this Section include, but are not limited to:

Items embedded in concrete, including anchors, sleeves, deck drains, castings, frames for hatches, angles, nosings, and other miscellaneous metals.

1.03 REFERENCES:

A. The following standards form a part of these specifications:

American Concrete Institute (ACI)

ACI	30l	Structural Concrete for Buildings
ACI	302	Recommended Practice for Concrete Floor and Slab Construction
ACI	304	Recommended Practice for Measuring, Mixing, Transporting, and Replacing Concrete
ACI	305	Recommended Practice for Hot Weather Concreting
ACI	306	Recommended Practice for Cold Weather Concreting
ACI	318	Building Code Requirements for Reinforced Concrete
ACI	347	Recommended Practice for Concrete Formwork
ACI	350	Code Requirements for Environmental Engineering Concrete Structures

American Society for Testing and Materials (ASTM)

ASTM	C33	Concrete Aggregates
ASTM	C39	Compressive Strength of Cylindrical Concrete Specimens
ASTM	C42	Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
ASTM	C87	Effect of Organic Impurities in Fine Aggregate on Strength of Mortar
ASTM	C94	Ready-Mixed Concrete
ASTM	C143	Standard Method for Slumps of Portland Cement Concrete
ASTM	C150	Portland Cement
ASTM	C171	Sheet Materials for Curing Concrete
ASTM	C231	Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM	C260	Air-Entraining Admixtures for Concrete
ASTM	C309	Liquid Membrane-Forming Compounds for Curing Concrete
ASTM	C494	Chemical Admixtures for Concrete
ASTM	D1751	Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM	D1752	Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction

1.04 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

A. Six sets of shop drawings of the materials specified herein shall be submitted to the Engineer for review.

B. Six copies of the statement of materials constituting the design of mixes which satisfy the specified strength for each size aggregate as required by ASTM C94 shall be submitted to the Engineer within one week following award of the contract.

C. Provide one copy of the "Certificate of Delivery" for each load of concrete as it arrives on the site, under the provisions of ASTM C94.

PART 2 - PRODUCTS

2.01 CONCRETE:

A. Concrete conforming to the requirements listed below shall be used where indicated on the drawings. Concrete used shall be a minimum of 4000 PSI.

TABLE

Minimum Comp. Strength at 28 days (psi)	Maximum Water/Cement ratio (gallons per bag of cement)*	Cement Factor: 94 lb. Bags per cubic yard minimum**
3000	0.59 (6.9)	5.5
4000	0.45 (5.4)	6.5
5000	0.40 (4.7)	7.4

* Based on air-entrained concrete. If non-air-entrained concrete is called for, the listed maximum water/cement ratios may be increased slightly, as approved by the Engineer. The water is the total water in the mix, including free water on the aggregate.

** These are minimum amounts; increase as necessary to meet mix requirements.

B. Concrete shall conform to ASTM C94. One copy of the Certificate of Delivery required by ASTM C94 shall be delivered to the Engineer immediately upon arrival of each load of concrete at the site. The Contractor shall be responsible for the design of the concrete mixtures.

C. Standard compression tests of all proposed mixes shall be made by the testing laboratory or other satisfactory evidence shall be presented that the design mixes will attain the minimum strengths listed on the design drawings or called for herein, within the limitations of the ACI Code. No concrete shall be delivered to the job site until the Engineer has approved the design mixes.

D. All concrete (unless otherwise directed) shall contain an air-entraining agent. Air entrained concrete shall have an air content by volume of 3 to 6 percent for l-l/2-inch aggregate and 4 to 8 percent for 3/4-inch aggregate. The air content shall be the responsibility of the testing laboratory and in accordance with ASTM C23l.

E. All concrete shall contain a mid-range water reducer to minimize cement and water content of the mix, at the specified slump, in accordance with ASTM C494.

F. Slump for all concrete shall be from 3-inch to 4-inch, except for concrete using a superplasticizer, when the maximum slump shall be 8-inches. Any concrete having a

slump greater than 4-inches (8-inches with superplasticizer) shall be promptly removed from the site.

G. No calcium chloride or admixtures containing calcium chloride shall be added to the concrete. No admixture other than those specified shall be used in concrete without the specific written permission of the Engineer in each case.

H. No additional water, except for the amount indicated by the design mix shall be added to the concrete without the prior permission of the Engineer.

2.02 CEMENT:

A. The cement shall be an approved brand of American manufactured Portland Cement, Type IIA conforming to ASTM Cl50. The brand name and type of cement proposed for use shall be submitted to the Engineer for approval immediately following award of contract. Only one color of cement, all of the same manufacture, shall be used for the work.

B. When the use of high-early-strength Portland cement (Type IIIA) is permitted by the Engineer the same strength requirements shall apply, but the indicated strengths shall be attained in 7 days instead of 28 days.

2.03 ADMIXTURES:

A. Air entraining agent shall be in accordance with ASTM C260.

B. Water reducing agent shall be a mid-range water reducer meeting ASTM C494, Type A.

C. Water reducing agent-retarder shall be in accordance with ASTM C494, Type D.

D. Superplasticizer agent shall be in accordance with ASTM C494, Type F or Type G and contain no more than 0.1% chloride ions. Product may be plant added or field added based on the best application considering distance, temperature and time.

2.04 AGGREGATES:

A. Except as otherwise noted, aggregate shall conform to the requirements of ASTM C33.

B. Fine aggregate shall consist of washed inert natural sand conforming to the requirements of ASTM C33.

C. Coarse aggregate shall consist of well-graded crushed stone or washed gravel conforming to the requirements of ASTM C33.

D. The following designated sizes of aggregate shall be the maximum employed in concrete.

2-inch for mass concrete
1½-inch for reinforced sections 18-inch and over in thickness
3/4-inch for reinforced and unreinforced sections less than 18-inch thickness.

2.05 WATER:

Water for concrete shall be potable, free from injurious amounts of oil, acid, alkali, organic matter and other deleterious substances.

2.06 GROUT:

Grout shall be mixed in the proportions of one part Portland Cement to 2 parts sand, by volume. Only sufficient water shall be used to enable grout to barely hold its shape when squeezed into a ball in the hand. Aggregate for grout shall conform to the requirements of the reference specification for concrete. Prior approval of the Engineer shall be obtained for the use of proprietary grouts, and the instructions of the Engineer shall be followed in their use.

2.07 CURING MATERIALS:

A. Curing compound shall be a curing/hardener compound such as Acurion by AntiHydro, Sikaguard Cure/Hard by Sika, Super Diamond Clear by Euclid or approved equal.

B. Curing paper shall be a fiber-reinforced laminated Kraft bituminous product conforming to the requirements of ASTM Cl7l.

2.08 JOINT FILLER:

1. Preformed joint filler strip shall conform to ASTM Dl75l or Dl752, having a thickness as indicated on the drawings.

2. Fillers shall be provided in pieces of the full thickness required. Use of multiple layers of thin pieces to make-up the full thickness will not be permitted.

PART 3 - EXECUTION

3.01 GENERAL:

Under no circumstances shall concrete that has set or partially set before placing be used; and no retempering of concrete or grout will be permitted.

3.02 PREPARATION:

A. Before placing concrete, forms and the space to be occupied by the concrete shall be thoroughly cleaned, and reinforcing steel and embedded metal shall be free from dirt, oil, mill scale, loose rust, paint or other material which would tend to reduce the bond.

B. Unless otherwise indicated, a moisture barrier shall be used under all slabs placed on the ground in accordance with ACI 302.1R. The moisture barrier shall be fungi-resistant and shall have a vapor permeance rating not exceeding 0.01 perms (Perms [grains/ft^2*hr*in. Hg]) per ASTM F1249 or ASTM E96) and 10 mils thickness (49 lbs/MSF). The moisture barrier shall be a high-performance underslab vapor retarder made from polyethylene resins that exceed ASTM E1745, Class A. Sheets shall be lapped 6-inches at joints and sealed with 2-inch wide tape or as recommended by the manufacturer. The vapor barrier should have all laps, seams, penetrations and terminations sealed and should carry across footings.

C. When no moisture barrier is used, the earth, concrete, masonry, or other water-permeable material against which concrete is to be placed shall be thoroughly saturated with water immediately before concrete is placed. No concrete shall be placed until the consolidation

of the ground and the arrangement and details of forms and reinforcing have been inspected and approved by the Engineer.

D. When joining fresh concrete to concrete which has attained full set, the latter shall be cleaned by chipping and washing off all dirt and scum and laitance. It then shall be moistened prior to placing new concrete.

E. Concrete surfaces that act as a seat for structural members (other than those resting on grout) shall be troweled to an extremely flat and level surface. If necessary, such surfaces shall be ground off to achieve the required flatness and level.

F. Fill concrete on top of concrete shall be placed in the locations indicated on the drawings or designated by the Engineer. Before fill concrete is placed, the following procedures shall be used to prepare surfaces; all dirt, scum and laitance shall be removed by chipping and washing. The clean, roughened base surface shall be saturated with water, but shall have no free water on the surface. A coat of 1:2 cement-sand grout, approximately 1/8-inch thick, shall be well scrubbed into the thoroughly dampened concrete base. The concrete fill shall be placed immediately, before grout has dried or set. Fill concrete shall be brought to the lines and grades shown on the drawings or approved by the Engineer.

G. Concrete for thrust and anchor blocks shall be placed against undisturbed earth and wooden side forms shall be used to provide satisfactory lines and dimensions. Felt roofing paper shall be placed to protect joints. No concrete shall be placed so as to cover joints, bolts or nuts, or to interfere with the removal of the joints. Minimum bearing areas and dimensions shall be as shown on the drawings.

3.03 MIXING:

A. Concrete shall be ready-mixed, or transit-mixed, as produced by equipment acceptable to the Engineer. No hand-mixing will be permitted. Adding water in controlled amounts during the mixing cycle shall be done only with the express approval of, and in the presence of the Engineer.

B. Ready-mix or transit-mixed concrete shall be transported to the site in watertight agitator or mixer trucks loaded not in excess of rated capacities for the respective conditions as stated on the nameplate. Discharge at the site shall be within 1-1/2 hours after cement was first introduced into the mix. Central mixed concrete shall be plant-mixed a minimum of 1-1/2 minutes per batch and then shall be truck-mixed or agitated a minimum of 8 minutes. Agitation shall begin immediately after the pre-mixed concrete is placed in the truck and shall continue without interruption until discharge. Transit-mixed concrete shall be mixed at mixing speed for at least 10 minutes immediately after charging the truck, followed by agitation without interruption until discharged.

C. All central plant and rolling stock equipment and methods shall conform to the latest Truck Mixer and Agitator Standards of the Truck Mixer Manufacturers' Bureau of the National Ready-Mixed Concrete Association, as well as ACI 304 and ASTM C94.

D. Attention is called to the importance of dispatching trucks from the batching plant so that they shall arrive at the site of the work just before the concrete is required, thus avoiding

excessive mixing of concrete while waiting or delays in placing successive layers of concrete in the forms.

3.04 INSTALLATION/APPLICATION/ERECTION:

A. Placing

1. No concrete shall be placed by pumping methods without the prior written approval of the Engineer. Should the Contractor be allowed to place concrete by pumping methods, procedures, mix design of concrete, and all other precautions shall be in accordance with ACI 304.2R and as approved by the Engineer.

2. Concrete shall be placed in alternate areas, as defined by the construction and control joints indicated on the design drawings. A minimum of 3 days shall elapse between placement of adjacent sections.

3. Segregation of the concrete shall be prevented during handling; should any segregation occur, the concrete shall be remixed before it is placed. Concrete shall be placed in the forms in horizontal layers not over l to 2 feet thick. Concrete shall not be allowed to drop freely more than 4 feet. If the free drop to the point of placement must exceed 4 feet, the Contractor shall obtain the approval of the Engineer for the proposed method of depositing the concrete. The concrete shall not be required to flow over distances greater than 3 feet in any direction in the forms or on the ground, unless otherwise permitted by the Engineer.

4. Unless otherwise noted, the work begun on any day shall be completed in daylight of the same day.

5. "Cold Joints" are to be avoided, but if they occur, they are to be treated as bonded construction joints.

6. Chutes for conveying concrete shall be of U-shaped design and sized to insure a continuous flow of concrete. Flat (coal) chutes shall not be employed. Chutes shall be metal or metal-lined, and each section shall have approximately the same slope. The slope shall not be less than 25 nor more than 45 degrees and shall be such as to prevent segregation of the ingredients. The discharge end of the chute shall be provided with a baffle plate or spout to prevent segregation. If the discharge end of the chute is more than 5 feet above the surface of the concrete in the forms, a spout shall be used and the lower end maintained as near the surface of deposit as practicable. When the operation is intermittent, the chute shall discharge into a hopper. Chutes shall be thoroughly cleaned before and after each run, and the debris and any water shall be discharged outside the forms. Concrete shall not be allowed to flow horizontally more than 5 feet.

7. Concrete during and immediately after depositing shall be thoroughly compacted by means of suitable tools. Internal type mechanical vibrators shall be employed to produce the required quality of finish. Vibration shall be done by experienced operators under close supervision and shall be carried on long enough to produce homogeneity and optimum consolidation without permitting segregation of the

solid constituents or "pumping" or migration of air. All vibrators shall be supplemented by proper wooden spade puddling adjacent to forms to remove included bubbles and honeycomb. This is essential for the top lifts of walls. All vibrators shall travel at least 10,000 rpm and be of adequate capacity. At least one vibrator shall be used for every 10 cubic yards of concrete per hour. In addition, one spare vibrator in operating condition shall be on the site.

8. Concrete slabs on the ground shall be well-tamped into place and foundation material shall be wet, tamped, and rolled until thoroughly compacted prior to placing concrete.

9. Concrete shall be deposited continuously in layers of such thickness that no concrete will be deposited on concrete that has hardened sufficiently to cause the formation of seams and planes of weakness within the section. If a section cannot be placed continuously, construction joints may be located at points as provided for in the drawings or approved by the Engineer.

10. Chutes, hoppers, spouts, adjacent work, etc., shall be thoroughly cleaned before and after each run, and the water and debris shall not be discharged inside the form.

B. Concrete Placing During Cold Weather

1. Concrete shall not be placed on frozen ground, and no frozen material or material containing ice shall be used. Materials for concrete shall be heated when concrete is mixed, placed, or cured when the mean daily temperature is below 40°F, or is expected to fall to below 40°F, within 72 hours, and the concrete after placing shall be protected by covering, heat, or both. No accelerant shall be used to prevent freezing.

2. The temperature of concrete surfaces shall not be permitted to drop below 50ºF. for at least 7 days after placement of the concrete.

3. All details of Contractor's handling and protecting of concrete during freezing weather shall be subject to the approval and direction of the Engineer. All procedures shall be in accordance with provisions of ACI 306.

C. Concrete Placing During Hot Weather

1. Concrete just placed shall be protected from the direct rays of the sun and the forms and reinforcement just prior to placing shall be sprinkled with cold water. The Contractor shall make every effort to minimize delays that will result in excessive mixing of the concrete after arrival on the job.

2. During periods of excessively hot weather (90°F, or above) ingredients in the concrete shall be cooled insofar as possible and cold mixing water shall be used to maintain the temperature of the concrete at permissible levels all in accordance with

the provisions of ACI 305. Any concrete with a temperature above 90°F, when ready for placement will not be acceptable, and will be rejected.

3. Temperature records shall be maintained throughout the period of hot weather giving air temperature, general weather conditions (calm, windy, clear, cloudy, etc.) and relative humidity. The record shall include checks on temperature of concrete as delivered and after placing in forms. Data should be correlated with the progress of the work so that conditions surrounding the construction of any part of the structure can be ascertained.

D. Pipes And Embedded Metals

1. Special care shall be taken to bring the concrete into solid contact with pipes and iron work embedded in the walls and floors, particularly underneath and around all pipes where a head of water exists, making watertight joints.

2. In general, such embedded items are not shown on the structural design drawings. Design drawings of the other trades shall be consulted for their location and details.

3. Anchor bolt location, size and details shall be verified with the equipment manufacturer's certified drawings before installation.

4. Anchor bolts, reglets, sleeves, edge angles and similar embedded items will be provided, delivered to the site under other Sections of the specification, for installation under this Section.

5. Where edge angles, etc., have nuts welded on to receive machine screws, the threads of the nuts shall be protected from concrete, and the concrete shall be excluded from the space to be occupied by the screw, by the use of wood plugs or other effective means.

6. Inserts required for hanging mechanical and electrical items shall be provided and installed in the forms under the mechanical and electrical sections of the specification.

7. Should the Contractor be allowed to leave openings in the concrete for pipes or ironwork, to await the arrival of items that would delay the prosecution of the work, the openings shall be subject to the approval of the Engineer. Appropriate construction joints shall be provided. In filling any such openings with concrete, a mixture of l: l-l/2 : 3 shall be used and a watertight bond shall be secured between the old and new concrete.

8. In bolting miscellaneous items to concrete after the concrete has set, expansion bolts of an approved pattern and type shall be used. The Contractor shall submit to

the Engineer, for approval, the types of expansion bolts. Expansion bolts shall not be used until they are approved.

E. Curing

1. Concrete curing shall be performed as specified in ACI 30l and as stated herein. All curing procedures shall have prior approval of the Engineer.

2. Concrete Floors

Concrete floors which are to receive paint, concrete fill, mortar setting beds, grout fill, or any other subsequent finish shall be cured by one of the following procedures immediately after completion of placement and finishing:

a. Ponding or continuous sprinkling.

b. Application of absorptive mats or fabric kept continuously wet.

c. Application of sand kept continuously wet.

d. Application of waterproof sheet materials conforming to ASTM Cl7l.

e. Application of curing compounds conforming to ASTM C309, if it can be demonstrated to the Engineer's satisfaction that the compound is applicable and that it will not prevent bonding of the subsequent finish to be received.

3. Curing procedure shall be continued for at least 7 days.

a. Moisture loss from surface placed against metal or wood forms shall be minimized by keeping forms wet until removal.

b. Curing shall be continued for at least 7 days. When forms are removed during the curing period, surfaces shall be cured by spraying or by the use of a curing compound as previously specified.

c. Surfaces shall be protected from traffic or damage until surfaces have hardened sufficiently. If necessary, 1/2-inch thick plywood sheets shall be used to protect the exposed surface.

d. Compound shall be placed at a rate of 200 square feet per gallon, in two applications perpendicular to each other.

F. Bracing And Supports

1. All concrete members shall be adequately and safely supported and braced until the permanent supports and braces are installed.

2. Backfilling against exterior walls shall not be done until supporting slabs are in place and have attained 70 percent of design strength, otherwise walls shall be braced against earth lateral pressure, using a system approved by the Engineer.

3. Backfilling against retaining walls shall not commence until the wall concrete has reached its 28-day strength.

G. Removing Forms And Supports

1. Removal of forms shall take place in accordance with ACI 347, Section 3.6. Except as otherwise specifically authorized by the Engineer, forms shall not be removed until the concrete has aged for the following number of day-degrees or attained 50 percent strength. (Day-degrees equals the total of number of days times the average daily air temperature at the surface of concrete. For example, 5 days at a daily average temperature of 60°F. equals 300 day-degrees.)

Location	Day-Degrees
Beams and Slabs	500
Walls and Vertical Surfaces	200

2. Shores under beams and slabs shall not be removed until the concrete has attained at least 70 percent of the specified cylinder strength and also sufficient strength to support safely its own weight and the construction loads upon it.

H. Patching

1. Defective concrete and honeycombed areas as determined by the Engineer shall be chipped down reasonably square and at least one-inch deep to sound concrete by means of hand chisels or pneumatic chipping hammers. Irregular voids or surface stones need not be removed if they are sound, free of laitance, and firmly imbedded in the parent concrete, subject to Engineer's final inspection. If honeycomb exists around reinforcement, chip to provide a clear space at least 1-inch wide all around the steel. For areas less than 1-1/2 inches deep, the patch may be made following the procedure for filling form tie holes, described in the subsection below, using adequately dry (non-trowelable) mixtures to avoid sagging. Thicker repairs will require build-up in 1-inch layers on successive days. Unless otherwise indicated, thicker repairs shall be made with Vertipatch mortar mixture blended with Acryl-Set, both by Master Builders, Inc., Cleveland, Ohio, or approved equal.

2. For concrete areas exposed to serious abrasion and/or impact forces, the Engineer may order the use of grout with a non-shrink metallic aggregate (Embeco by Master Builders, Inc.; Ironite by Fox Industries, Madison, IL; or approved equal) as an additive in the proportions listed below:

	Small Patches		Large Formed Patches	
Material	Volumes	Weights	Volumes	Weights
Cement	1.0	1.0	1.0	1.0
Metal Aggregate	0.15	0.25	0.2	0.33
Sand	1.5	1.5	1.5	1.0
Pea Gravel	--	--	1.5	1.5

I. Finishing Of Formed Surfaces

1. All concrete that is to be left exposed to view shall be scraped to remove projecting imperfections left by voids in the forms.

2. In addition to scraping, exterior exposed concrete shall be covered with a cement-base plaster mix. The mix shall consist of Thoroseal Plastic Mix and Acryl 60, as manufactured by Standard Drywall Products, Miami, FL, or approved equal. It shall be mixed and applied in accordance with the manufacturer's recommendations.

3. In addition to scraping, interior concrete surfaces which will be exposed to view and concrete surfaces which are to be prepared and painted as specified in Section 09 90 01, SWIMMING POOL PAINTING, shall receive a smooth rubbed finish, in accordance with ACI 301 and as described below.

4. To permit satisfactory finishing, forms shall be removed from the vertical faces of the concrete as early as is possible without damaging the surface. Immediately after stripping forms, any fins or projections left by the forms shall be chipped off, and the surfaces rubbed smooth.

5. Form tie holes and other voids and faults shall be patched. Voids shall be cleaned out, roughened, thoroughly wetted, coated with neat cement paste, and filled with mortar of cement and sand in the same proportions, materials, and color as used in the concrete. The surface of the patch shall be flush with the surrounding surface after finishing operations are complete. Surface shall be kept continuously damp until patches are firm enough to be rubbed without damage.

6. Rubbing shall be performed while the surface is wet using a carborundum or cement sand brick, to achieve a smooth uniform, even textured finish. Patched and chipped areas shall be blended to match as closely as possible the appearance of the rest of the surface. No cement wash or plastering will be permitted, and no mortar shall be used except as required above.

7. Where finishing is performed before the end of the curing period, concrete shall under no circumstances be permitted to dry out, and shall be kept continuously

moist from time of placing until end of curing period, or until curing membrane is applied.

J. Concrete Floor Finishing Requirements

Unless designated otherwise, concrete floors shall have a troweled finish as specified in Section ll.7 of ACI 30l. Troweled finishes shall conform to the requirements of "Class A Tolerances," Section ll.9 as specified in ACI 30l.

L. Testing

1. The Contractor shall provide all field testing and inspection services, and shall pay for all such services. The Engineer shall approve the testing laboratory and shall inform the Contractor when samples are to be taken for testing. The Contractor shall forward all test results to the Engineer as soon as they are available.

2. At least one slump test shall be performed from each truckload of concrete. The sample for slump shall be taken from the middle third of a truckload. Air content tests shall be made at the discretion of the Engineer. If the measured slump or air content falls outside the specified limits, a check test shall be made immediately on another portion of the same sample. In the event of a second failure, the concrete shall be considered to have failed the requirements of the specification and shall be immediately removed from the jobsite to be discarded.

3. The Contractor shall advise the Engineer of his readiness to proceed with concrete placement at least one working day prior to each placement. The Engineer will inspect the preparations for concrete, including the preparation of previously placed concrete, the reinforcing, and the alignment and tightness of formwork. No placement shall be made without the prior approval of the Engineer.

4. A minimum of four standard compression test cylinders shall be made and tested for each 100 cubic yards or fraction thereof for each type and design strength of concrete from each day's placement of concrete. One cylinder shall be tested at 7 days and two cylinders at 28 days. The fourth cylinder from each set shall be kept until the 28 day test report on the second and third cylinders in the same set has been received. The Engineer reserves the right to require test cylinders to be made for each truckload of concrete if the nature of the project or project experience indicates such additional tests are required for proper control of concrete quality; Concrete testing shall be paid for by the Contractor.

5. The strength level shall be considered satisfactory so long as the averages of all sets of three consecutive strength test results equal or exceed the specified strength f'c, and no individual strength test (average of two cylinders) result falls below the specified strength f'c by more than 500 psi.

6. In the event the average compressive strength of the two 28 day cylinders do not achieve the required level, the Engineer may elect to test the fourth cylinder immediately or test it after 56 days.

M. Failure To Meet Requirements

1. The Engineer shall have the right to reject concrete represented by low strength tests or to agree to further testing of the concrete. Rejected concrete shall be promptly removed and replaced with concrete conforming to the specification. The decision of the Engineer as to whether substandard concrete is to be accepted or rejected or additional tests shall be conducted shall be final. All direct and indirect costs associated with further curing and testing of the concrete shall be at the Contractor's expense. All costs associated with removing rejected concrete, placing new concrete, and conducting tests on new concrete shall be at the Contractor's expense.

2. If the Engineer agrees to consider further curing and/or testing of the concrete before making a final decision, the Contractor shall submit a detailed plan to the Engineer, including proposed criteria for acceptance of the concrete. The plan may include additional curing of the concrete, drilling and testing of cores, load testing of the structure, or a combination.

3. If additional curing is permitted before further inspection and testing, the Contractor shall provide any necessary materials and labor to further cure the suspect concrete.

4. If drilling and testing of cores is permitted, the Contractor shall be responsible for obtaining the cores, including provision of ladders, scaffolding, and such incidental equipment as may be required. If additional curing is permitted, cores shall be drilled after the curing period, and shall be in accordance with ASTM Methods C39 and C42. The Contractor shall repair all core holes to the satisfaction of the Engineer.

5. The burden of proof, including, but not limited to the work of cutting and testing the cores, inspection, evaluation, engineering, repair of the holes, or removal and replacement of the concrete in question, and all associated costs therefor, shall be at the expense of the Contractor.

6. If load testing of the concrete is permitted, and if not otherwise indicated, slabs or beams under load test shall be loaded with their own weights plus a superimposed load of 2 times the design live load. The load shall be applied uniformly over the portion being tested in the approved manner and left in position for 24 hours. The structure shall be considered satisfactory if deflection "D" in feet, at end of 24-hour period, does not exceed the following value:

   D equals 0.001 (L x L)/t

   in which "L" is span in feet, "t" is depth of slab, or beam in inches. If deflection exceeds "D" in the above formula, the concrete shall be considered faulty unless within 24 hours after removal of the load, the slab, or beam under test recovers at least 75 percent of the observed deflection.

7. If the suspect concrete still fails to meet specification requirements, the Engineer

shall have the right to reject the concrete, have it removed and replaced, in accordance with paragraph 5 above, or to require mechanical strengthening of the concrete to satisfy project requirements. The Contractor shall submit a removal and replacement plan for review by the Engineer.

END OF SECTION

SECTION 07 90 00

WATERSTOPS & SEALANTS FOR SWIMMING POOLS

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. Furnish all materials, equipment, labor and services required for all waterstops, caulking, reinforced PVC waterproof membrane and sealants.

B. Include sealants, joint backup, primers, elastomeric and PVC waterstop.

C. Waterstop and sealants are required on all concrete containment curbs, and where fountain walls meet fountains poured-floor, fountain walls meet fountain walls, floor-to-floor, at all tank walls, fountain supports and manholes, at any construction or expansion joint, and as shown on the drawings.

D. Furnish and install waterproof coating and sealants for fountain.

E. See drawings for locations and additional details.

1. Furnish, install, and maintain all staging, scaffolding, and hoisting required for this work.

1.02 RELATED WORK:

A. The related work shall be performed under other Sections:

1. Section 03 30 00, CAST IN PLACE CONCRETE

1.03 QUALITY ASSURANCE:

A. Materials used in fulfilling the requirements of this Section shall be suitable for each intended use and shall be of the type specified for each category. Materials shall be applied under temperatures required for each type in accordance with the manufacturer's recommendations.

B. In addition to other requirements, compounds shall contain no acid or ingredients that will affect masonry, corrode metal, or have injurious effects on paint.

C. Use proper materials specified herein for each location where drawings call for sealants.

D. Submit manufacturer's certification of compliance with these specifications for each material. (Acceptable for use in fountains.)

1.04 REFERENCES:

A. Work shall conform to codes and standards of the following agencies as further cited herein:

1. Federal Specifications published by the United States Government, available from General Services Administration, Specification and Consumer Information Distribution Service, Washington Navy Yard Building 197, Washington, DC.

1.05 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

A. Six sets of manufacturer's literature of the materials of this section shall be submitted to the Engineer for review.

1.06 SAMPLES:

A. Submit samples of all products listed in Part 2 - PRODUCTS.

B. Sealant samples shall be 3-inch strips joining wood, metal or hardboard. Joint backup sample shall be 6-inches long, ½-inch or greater in diameter. Foam sealant shall also be 6-inches long.

C. Submit manufacturer’s product description, performance and test data on all materials, for Engineer’s review.

D. Colors of all materials shall be as selected.

1.07 DELIVERY, STORAGE AND HANDLING:

A. Each container shall bear an unbroken seal, test number and label of the manufacturer upon delivery at the site. Unlabeled materials will be rejected and shall be removed from the site and replaced with approved-labeled materials at no additional cost to the Owner.

B. Deliver materials to site and install work under this Section in ample time to avoid delay in job progress and at such times as to permit proper coordination of the various parts.

C. Store waterstop materials under tarps to protect from oil, dirt and sunlight.

1.08 GUARANTEES:

A. Attention is directed to provisions of the GENERAL CONDITIONS regarding guarantees and warranties for work under this Contract.

B. Manufacturers shall provide their standard guarantees for work under this Section. However, such guarantees shall be in addition to and not in lieu of all other liabilities which manufacturers and Contractor may have by law or by other provisions for the Contract Documents.

PART 2 - PRODUCTS

2.01 MATERIALS

2.02 JOINT – SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin) as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.03 POOL DECK AND POOL JOINT SUBMERGED SEALANT

A. The product specified herein is to establish minimum acceptable quality. Product shall be resistant to chlorides, and shall come in various colors. Product shall be a two part Polysulfide based caulking, coming in multiple colors, with the following parameters:

- ASTM C 920, Type M, Grade P, Class 25, T and NT • CRD-C 506,
- Type I, Classes A & B • Federal Specifications A-A-1556A, Type M, Grade P, Class 25, T and NT
- Shore Hardness A 30±5 Consistency Liquid, Self-Leveling Tack-Free Time 8 Hours Linear Shrinkage
- Negligible Tensile Strength 125 PSI Elongation 400%+ Peel Adhesion Plate Glass-20 lb./in. (per ASTM C 794) (357.2 g/mm) min.

- (With primer) Aluminum-20 lb./in. (357.2 g/mm) min. Application Temperature Range 40˚ F (4˚ C) min. Storage Life 1 year when stored in unopened containers under 80˚ F (27˚ C)

B. APPROVED MANUFACTURES:

1. WR Meadows
2. Pecora
3. Euclid
4. Approved Equal

C. Joint primer shall be for concrete or as recommended by the caulking manufacturer.

2.05 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealants to joint substrates indicated, as determined from preconstruction joint sealant substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

2.06 WATERSTOPS:

A. Waterstop manufacturer shall demonstrate five years (minimum) continuous, successful experience in production of Waterstop.

B. Caulking applied waterstop shall be a hydrophilic waterstop in a cartridge. Hydrophilic waterstop shall be a water-swelling single component elastic sealant. It shall swell up to 2x the original size in the presence of water. It shall be installed to provide a minimum of 3” of clear concrete cover over the sealant bead. The bead shall be a minimum of ½” x ½” bead. Product shall be manufactured by Adeka, model no P201, or approved equal.

C. Provide flexible PVC (polyvinyl chloride) waterstop as manufactured by Greenstreak or approved equal, profile style number (717 ribbed with center bulb 6-inch for interior fountain application, and 701 ribbed with center bulb 4-inch for gutter and deck connection).

D. The PVC waterstop shall be extruded from an elastomeric plastic material of which the basin resin is prime virgin polyvinyl chloride. The PVC compound shall not contain any scrapped or reclaimed material or pigment whatsoever.

E. PVC waterstop shall not stain or discolor concrete or adjacent metal structures.

E. Performance Requirements as follows:

Property	**Test Method**	**Required Limits**
Water absorption	ASTM D 570	0.15% max
Tear Resistance	ASTM D 624	300 lb/in (52.5 kN/m) min.
Ultimate Elongation	ASTM D 638	350% min.
Tensile Strength	ASTM D 638	2000 psi (13.78 Mpa) min.
Low Temperature Brittleness	ASTM D 746	No Failure @ -35o F (-37o C)
Stiffness in Flexure	ASTM D 747	700 psi (4.82 Mpa) min.
Specific Gravity	ASTM D 792	1.38 max.
Hardness, Shore A	ASTM D 2240	79 ± 3
Tensile Strength after accelerated extraction	CRD-C 572	1600 psi (9.54 Mpa) min.
Elongation after accelerated extraction	CRD-C 572	300% min.
Effect of Alkalis after 7 days: Weight Change Hardness Change	CRD-C 572	between -0.10% / +0.25% +/- 5 points

2.07 ACCESSORIES:

A. Provide factory made waterstop fabrications for all changes of direction, intersections, and transitions leaving only straight butt joint splices for the field.

B. Provide hog rings or grommets spaced at 12-inches on center along length of waterstop.

C. Provide Teflon coated, thermostatically controlled waterstop splicing irons for field butt splices.

PART 3 - EXECUTION

3.01 INSPECTION:

A. Surfaces to receive waterstop and sealants shall be clean, dry and free of oil, dust and loose particles.

B. Before starting work, inspect all surfaces to receive waterstop and sealant work and report in writing to the Engineer any surfaces that are not suitable for application of such materials.

C. Unsuitable surfaces shall be corrected before work begins. Commencement of material application to any surface shall constitute acceptance of that surface as proper to receive the work. Subsequent defects in work shall be corrected under this Section without additional cost to the Owner.

3.02 PREPARATION FOR SEALANTS AND WATERSTOP:

A. Notify the proper trades of locations where adequate rabbets for sealant have not been provided; all such rabbets shall be prepared by cutting and cleaning out material to the minimum depth required and by grinding to the minimum width by the appropriate trade.

B. Wire brush full depth of joints in concrete, masonry, mortar and plaster as required to obtain a firm, clean surface. Clean metal surfaces with wire brush where required to remove scale and other deposits and wipe clean with a mild, non-staining solvent. Clean other surfaces by methods approved by the sealant manufacturer. Where joint has been mortar-filled, rake out existing mortar 3¾-inches deep.

1. Prime surfaces to receive sealing compounds where recommended by manufacturer in accordance with manufacturer's printed instructions.

C. Install continuous lengths of joint backing material in proper size, shape, and depth. Except where otherwise specified or recommended by manufacturer, depths of joints not exceeding ½-inch in width shall be approximately the same as the width. Depth of joints exceeding ½-inch in width shall be approximately ½ the width of the joint. No sealed joint shall be less than ¼-inch deep.

D. Install joint backup in all exterior joints in excess of 5/8-inch depth, and in all interior joints requiring backup, placing the bead in the joint in a manner that will assure constant sealant material depth. Set bead into joint continuously by slightly stretching during placement to permit compression against sides of joint without surface wrinkles or buckles.

E. Waterproof membrane shall be installed on clean concrete surface and membrane drain shall be protected from being plugged or covered with material.

3.03 SEALANT APPLICATION:

A. Apply sealant only to clean, dry surfaces, and only when the ambient temperature is within manufacturer's recommended range.

B. Application shall be in strict accordance with manufacturer's printed instructions.

C. Apply gun grade sealants with sealant guns of type approved by sealant manufacturer using nozzles sized to fit into joints and drive material with sufficient pressure to fill all voids. Install sealants in continuous, uninterrupted, full-length beads. Superficial pointing of joints with a thin bead of compound will not be acceptable.

D. Apply pouring grade sealant at horizontal and deck joints in accordance with manufacturer's recommendations over joint backing. Joints shall be continuously filled, level and smooth.

E. Neatly point and tool all finished joints, concave, uniformly smooth and free of wrinkles, waves, sag lines, and other imperfections. Keep outer edge of sealant 1/8-inch back from face of surrounding material. Remove masking tape immediately after tooling but before sealant has set.

F. Provide sealant at exterior saddles and thresholds not sealed under another Section. Set same in a full bed of exterior sealant not less than 3/8-inch thick. Clean off excess compound after installing.

G. Surfaces of all materials adjoining sealant joints shall be fully protected and be kept clean and free of smears of compound or other soiling due to sealant application. Use non-staining masking tape as required.

3.04 COMPRESSION SEAL INSTALLATION (WATERSTOP):

A. Follow manufacturer's instructions for sizing and installing PVC. Use tools, adhesives and lubricants as recommended.

B. Seal shall fill entire opening snugly to prevent water entry. Edges shall be straight and without ripples or wrinkles.

C. All connections shall be welded together and tested to insure watertight seal.

3.05 INSTALLATION:

A. Field butt splices shall be heat fused welded using a Teflon coated thermostatically controlled waterstop splicing iron at approximately 380 degrees F. Follow approved manufacturer recommendations. Lapping of waterstop, use of adhesives, or solvents shall not be allowed.

B. Center waterstop in joint and secure waterstop in correct position using hog rings or grommets spaced at 12-inches on center along the length of the waterstop and wire tie to adjacent reinforcing steel.

3.06 FIELD QUALITY CONTROL:

A. Waterstop splicing defects which are unacceptable include, but are not limited to the following:
   1. Tensile strength less than 80 percent of parent section.
   2. Misalignment of center bulb, ribs, and end bulbs greater than 1/16-inch.
   3. Bond failure at joint deeper than 1/16-inch or 15 percent of material thickness.
   4. Misalignment that reduces waterstop cross section more than 15 percent.
   5. Visible porosity in the weld.
   6. Bubbles or inadequate bonding.
   7. Visible signs of splice separation when cooled splice is bent by hand at a sharp angle.
   8. Charred or burnt material.

3.07 PROTECTION AND CLEANING:

A. Clean all surfaces of adjacent surfaces, which have been marked or soiled by the work of this Section, removing all excess materials there from. Use only cleaning materials and solvents that will not damage the surfaces in any way.

B. Remove all debris and rubbish as the work progresses, and legally dispose of same.

C. At completion of work, do final cleaning, leaving the work and adjacent surfaces in a clean and neat condition.

END OF SECTION

SECTION 09 22 00

SWIMMING POOL PLASTER

PART 1 – GENERAL

1.01 WORK INCLUDED:

A. Plaster pool floor and walls with approved design mix.

B. Water analysis and pre-fill requirements.

1.02 RELATED WORK:

A. The following items of related work are specified and included in other Sections of the Specification:

1. Section 07 90 00, WATERSTOP AND SEALANT FOR SWIMMING POOLS

2. Section 09 30 10, SWIMMING POOL TILE

1.03 QUALITY ASSURANCE:

A. Materials used in fulfilling the requirements of this Section shall be suitable for each intended use and shall be of the type specified for each category. Materials shall be applied under temperatures required for each type in accordance with the manufacturers' recommendations.

B. In addition to other requirements, compounds shall contain no acid or ingredients that will affect masonry, corrode metal, or have injurious effects on paint.

C. Use proper materials specified herein for each location whether Drawings call for "caulking" or "sealant".

D. Submit manufacturers' certification of compliance with these specifications for each material. (Acceptable for use in swimming pool.)

E. Protect all pipes, fittings, gutters and drains from debris during preparation and plaster operations.

1.04 REFERENCES:

A. The following standards form part of these specifications as referenced:

American Society for Testing and Materials (ASTM)

ASTM	C150	Portland Cement
ASTM	C144	Aggregate for Masonry Mortar
ASTM	C207	Hydrated Lime for Masonry Purposes
ASTM	C206-03	Finishing Hydrated Lime

1.05 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

A. Samples: Prepare 24-inch by 24-inch square panel at the site showing color and texture for pool plaster. Finished plasterwork shall match the approved sample panel.

B. Certificates: Submit certificates attesting that the materials furnished meet the requirements specified herein.

C. Certifications: Please submit the resumes of the individuals performing the work and a list or previously completed projects in the last five years that uses the same material and technique as the material being submitted

D. Test Report: Submit results of domestic water analysis and calculation of amounts of chemicals required to balance pool water on initial fill of pool.

1.06 PRODUCT DELIVERY AND STORAGE:

A. Deliver manufactured materials to site in manufacturers' original unbroken packages or containers bearing manufacturers' name and brand labels. Keep cementitious materials dry until ready to be used and stored off the ground, under cover and away from damp surfaces.

1.07 JOB CONDITIONS:

A. Apply plaster in swimming pool only when ambient temperature is above 40 degrees F and below 90 degrees F, and protect applied plaster from rapid drying by sun or wind until curing is completed or pool is filled with water. Proper application temperatures shall confirm with the submitted products manufacturers specifications.

1.08 GUARANTEES:

A. The Contractor warrants to the Owner that materials and equipment furnished under the contract will be of good quality and new unless otherwise required or permitted by the Contract documents, that the work will be free from defects not inherent in

the quality required or permitted and that the work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, improper or insufficient maintenance, improper operation, modifications not executed by the Contractor or improper wear and tear under normal usage. If required by the Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. All warranties shall be for a period of one year, unless otherwise specified.

B. The Contractor shall agree to repair or replace any work at no cost to the Owner, upon written notification from the Owner within the warranty period. Prorated warranties are not acceptable.

PART 2 – PRODUCTS

2.01 APPROVED SUPPLIES AND COLOR STYLES:

A. Diamond Brite plaster by Southern Grout & Mortar, Pompano Beach, FL. Color shall be "Premium White". This style shall be applied on all walls and floor of the pool as indicated on the plans.

B. Wet Edge Technologies Plaster, Mesa, AZ. Color shall be "Polar White". This style shall be applied on all walls and floor of the pool AS indicated on the plans.

C. Or Approved Equal.

D. Water: Clean, fresh, from domestic potable source.

E. Contractor to submit color sampling with colors that are similar to the ones listed above if an alternative sample is to be selected.

2.03 PROPORTIONS AND MIXING:

A. Materials are specified on a volume basis and shall be measured in approved containers, which will insure that the specified proportions will be controlled and accurately maintained during the progress of the work. Measuring materials with shovels ("shovel count") is not permitted.

B. White Marble Pool Plaster Finish Coat: Mix finish in proportion of one part by volume of white Portland Cement to not more than two parts by volume of aggregates (specified white marble dust).

C. Special plaster additives must be pre-approved by Engineer prior to use.

D. Mixing: Perform mixing in approved mechanical mixers of the type in which quantity of water can be controlled accurately and uniformly. While mixer is in continuous operation, charge approximately 90% of estimated quantity of water, half of sand, all cement, and the other one-half of the sand into mixer in that sequence and mix thoroughly with remainder of water until mixture is uniform in color and consistency. Avoid excess mixing to prevent hasty solution of cement resulting in accelerated set. Discard plaster, which has begun to set before it is used, retempering is not allowed. Do not use any caked or lump materials. Completely empty mixer and mixing boxes after each batch is mixed and keep free of old plaster.

2.04 WATERPROOFING SYSTEM

A. A penetrating waterproof system shall be exposed on all concrete surfaces that will be submerged inside the pool prior to installation of a plaster finish. The product shall be manufactured by Aquron or approved equal. Product by Aquron shall be CSPS, which shall be installed by a manufacturer certified installer.

B. Product shall meet all technical requirements listed below:

a. Physical Liquid
b. Color Clear
c. Odor None
d. Specific gravity 1.11±
e. Flash point None
f. pH 12±
g. Toxicity None
h. Boiling point 212ºF/100ºC
i. Freeze temperature 32ºF/0ºC
j. Hazardous vapors None
k. Weight per gallon. 9.18lbs/4.16kg
l. Environmental impact Neutral
m. User-friendly Yes
n. Shelf life Indefinite
o. Freeze harm None (allow to thaw completely)
p. Surface bond quality Excellent
q. Flammability None
r. VOC/VOS content None
s. Resistance to UV Excellent
t. Paintable Yes
u. Pollutants None
v. Waste disposal methods Non-hazardous
w. Resistance to abrasion Excellent
x. Polymerization nil
y. Solids before applied nil
z. Solids after applied 100%

aa. R-Factor Increases up to 20
bb. Recommended coverage 150 sq. feet per US gallon/
cc. 3.5 sq. meters per liter

C. This product shall be used on the walls of the pool or in any areas that are constructed with Gunite or Shotcrete.

D. Furnish and install multicoat waterproof membrane, or approved equal, for any areas where structure is constructed with cast in place concrete.

PART 3 – EXECUTION

3.01 PREPARATION OF SURFACES:

A. Clean base surfaces of projections, dust, loose particles, grease, bond breakers, and foreign matter; make sufficiently rough to provide a strong mechanical bond. Wash entire concrete pool shell with acidic solution within two (2) hours of plastering. Do not apply plaster directly to the surfaces of masonry or concrete that are coated with any acidic solution compound or similar agent until compound or agent is completely removed by water blasting. Thoroughly wash entire surface with 2,000-psi high-pressure water immediately prior to plastering. Wet cementitious base surfaces with a fine fog water spray to produce a uniformly moist condition and check screeds, pool equipment, and accessories for correct alignment before plastering is started. Do not apply plaster to base surfaces containing frost. Install temporary coverings as required to protect adjoining surfaces from staining or damage by plastering operations.

B. Bond coats or scratch coats used must be pre-approved by Engineer prior to application on pool surface.

3.02 APPLICATION OF PLASTER:

A. General: Apply finish plaster to minimum ½-inch thickness at any location. Apply finish plaster by hand or machine. If plastering machine is used, control fluidity of plaster to have a slump not exceeding 1-1/2-inches when tested using a 2-inch by 4-inch by 6-inch high slump cone. Do not add additional water to the mix subsequent to determining water content to meet this slump. Perform slump test according to following procedure:

1. Place cone on level, dry non-absorptive base plate.

2. While holding cone firmly against base plate, fill cone with plaster taken directly from hose or nozzle of plastering machine, tamping with a metal rod during filling to release all air bubbles.

3. Screed off plaster level with top of cone. Remove cone by lifting it straight up with a slow and smooth motion.

4. Place cone in a vertical position adjacent to freed plaster sample using care not to jiggle base plate.

5. Lay straightedge across top of cone being careful not to vibrate cone, measure slump in inches from bottom edge of straightedge to the top of slumped plaster sample.

B. Workmanship: Apply finish plaster in two coats by "double-back" method with second coat applied as soon as first coat is tamped and initially floated. Apply plaster with sufficient pressure to provide a good bond on bases. Work plaster to screeds at intervals of from 5 feet to 8 feet on straight surfaces. Apply smooth trowel finish without waves, cracks, trowel marks, ridges, pits, crazing, discoloration, projections, or other imperfections. Form plaster carefully around curves and angles, and consequent drooping of applications. Produce surfaces free of visible junction marks in finish coat where one day's work adjoins another.

C. Curing: Cure plaster with fine fog water spray applied to finish coat as frequently as required to prevent dry-out of plaster. Keep plaster damp until pool is filled. Prevent damage or staining of plaster by troweling.

D. Patching, Pointing, and Cleaning Up: Upon completion, cut out and patch loose, cracked, damaged, or defective plaster; patches matching existing plaster in texture, color, and finish, flush with adjoining plaster. Perform pointing and patching of surfaces and plasterwork abutting or adjoining any other finish work in a neat and workmanlike manner. If 10 percent or more of the pool's plaster finish is found to be defective, the plaster shall be removed from all surfaces and replaced completely. Remove plaster droppings or spatterings from all surfaces. Leave plaster surfaces in clean, unblemished condition ready for pool filling. Remove protective coverings from adjoining surfaces. Remove rubbish and debris from the site.

3.04 EXPANSION JOINTS / PLASTER CHANGE / TERMINATION:

A. Contractor shall provide a row of 2"x2" tile on either side of the expansion joints when applicable.

B. Contractor shall provide a single row of 2"x2" tile on the termination of plaster from one type to another or if plastering continues into multiple days, or a cold joint is left.

C. Tile shall be selected by the owner, and shall be installed in accordance to specification section 09 30 10 – SWIMMING POOL TILE.

3.03 PRE-FILL SPECIFICATION:

A. Contractor shall employ a qualified water testing agency to analyze the domestic water with which the pool will be filled within 2 weeks of the plaster date, and shall employ a swimming pool experienced water chemistry consultant to determine types and quantities of chemicals required to ensure calcium-balanced water immediately upon the completion of water filling.

1. Have on hand quantities of the chemicals as determined above, plus 25% overage for follow-up treatment. These chemicals, typically including calcium chloride, bicarbonate of soda, and muriatic acid, are in addition to standard chlorine products and alkalizer/ph control products required elsewhere.

B. The surge tanks shall not be plastered until all other work in the area is substantially complete and the filtration system and chlorination systems are complete and ready for start-up. The Contractor shall supply all chemical required for treatment of the pool water.

C. Contractor shall submit domestic water analysis to Owner and/or Engineer at least 2 weeks prior to filling the pool(s).

END OF SECTION

SECTION 09 30 10

SWIMMING POOL TILE

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. FOUNTAIN TILE AND GROUT:

1. The Contractor shall conduct his own measurements to verify the tile and grout quantities for his bid.

2. Furnish and installation of 6”x6” waterline tile and 2”x2” contrasting color tile in an epoxy setting bed and grouted with epoxy grout.

3. Surface preparation and cleaning for tile installation.

4. The Contractor shall construct a 2-foot by 2-foot mock-up displaying the proposed tile, grout and contrasting colors.

1.02 RELATED WORK:

A. The following items of related work are specified and included in other Sections of the Specification:

1. Section 09 22 00 – SWIMMING POOL PLASTER

1.03 QUALITY ASSURANCE:

A. Work and materials for tiling shall be in accordance with system P602MB-12 or P602-11 of the TCNA Handbook.

1.04 REFERENCES:

A. The following standards for a part of these specifications as referenced:

American Society for Testing and Materials (ASTM)

ASTM	C1028	Tile Slip Resistance
ASTM	C1027	Tile Resistance to Abrasion and Tread Wear
ASTM	C1026	Tile Resistance to Freeze-Thaw Cycling
ASTM	C373	Tile Water Absorption

ASTM	C650	Tile Chemical Resistance
ASTM	C648	Tile Break Strength
ASTM	C1378	Tile Stain Resistance and Maintainability
ASTM	C150	Portland Cement
ASTM	C144	Aggregate for Masonry Mortar
ASTM	C207	Hydrated Lime for Masonry Purposes

American National Standards Institute (ANSI)

ANSI A108/A118/A136.1 Installation of Ceramic Tile

ASNI A137.1 Ceramic Tile Council of North America

2011 TCNA Handbook for Ceramic, Glass and Stone Tile Installation

1.05 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

A. Six sets of shop drawings indicating tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, thresholds and setting details.

B. Three full size samples of each color tile selected, one full size sample of each special shape required, and samples of divider strip and of cured pointing mortar shall be submitted to the Engineer for review before the tile is ordered for this work. Samples of pointing mortar shall be resubmitted as required until color and texture are approved by the Engineer.

C. Furnish a complete in place tile mock up board on a 4-Foot by 4-Foot board showing the mortar beds, proposed tile with proposed contracting tile, and proposed grout color for the Engineer and Owners review and approval.

1.06 PRODUCT DELIVERY AND STORAGE:

A. Deliver tile materials to site in unopened factory containers sealed with Grade Seals bearing printed name or manufacturer and the words “Standard Grade”. Keep the Grade Seals intact and containers dry until tiles are used.

B Tile accessory materials shall be protected from damage and deterioration during delivery, storage and installation.

C. Tile containers shall not be opened or the manufacturer's seals broken until they have been inspected by the Engineer.

D. A master grade certificate shall be submitted to the Engineer. The certificate shall be the signature of the installer and the manufacturer and shall state the kinds and grades of tile furnished. The identification marks on the tile shall correspond with marks on the certificate.

E. Keep cementitious materials dry until used.

1.07 GUARANTEES:

A. The Contractor shall agree to repair or replace any Work at no cost to the Owner, upon written notification from the Owner within the one year warranty period.

PART 2 - PRODUCTS

2.01 BASIC MATERIALS:

A. Portland Cement: ASTM C150, Type II, low alkali.

B. Hydrated Lime: ASTM C207, Type S.

C. Mortar Sand: ASTM C144 at least sand except all passing the No. 30 sieve.

D. Joint Sand: Same as mortar sand except all passing the No. 30 sieve.

E. Water: Clean and fresh, from domestic potable source.

F. Color Pigments: Pure ground mineral oxides, non-fading, alkali and lime proof, factory weighed and packaged.

G. Mortar admixture shall be in accordance with manufacturer's instructions.

2.02 TILE MATERIALS:

A. Standard Grade conforming to ANSI A137.1. Provide trimmer units as indicated and specified, including special shapes as detailed or required. Tile patterns and colors shall be as indicated and specified, colors of approved shades. Mesh mounted or perforated paper backed tile is not allowed where the mesh of paper remains as a permanent part of the installation. Provide tile as manufactured by American Olean, Dal Tile, Armstrong Ceramic Tile, or approved equal.

B. Unglazed Ceramic Mosaic Tile:

1. Type: Porcelain unglazed ceramic mosaic tile, cushion or all-purpose edges, 1-inch square unless otherwise noted. Contactor shall match existing tile color, submit to Owner or Owners representative for review.

2. Ceramic tile shall be selected by Owner, "Unglazed", 6-inch by 6-inch frost proof tile for water line, and 2-inch by 2-inch frost proof tile for contrasting color bands.

2.03 THICK SETTING BED MORTAR

A. Latex Portland Cement Mortar for thick beds, screeds, leveling beds and scratch/plaster coats to be weather, frost, shock resistant, GreenGuard compliant, and meet the following physical requirements:

Compressive Strength (ANSI A118.4 Modified):	>4,000 psi (27.6 MPa)
Water Absorption (ANSI A118.6):	≤ 5%
Service Rating (TCA/ASTM C627):	Extra Heavy
Smoke & Flame Contribution (ASTM E84 Modified):	0
Total VOC Content:	< 0.05 mg/m^3

2.04 THIN SETTING BED MORTAR:

A. Latex Portland Cement Medium Bed Mortar for thin set and slurry bond coats to be weather, frost, shock resistant, non-flammable, GreenGuard compliant, and meet the following physical requirements:

Compressive strength (ANSI A118.4):	>2500 psi (17.2 MPa)
28 Day bond strength (ANSI A118.4):	≥300 psi (2.1 MPa)
7 day water soak bond strength (ANSI A118.4):	≥190 psi (1.3 MPa)
Sag Resistance (EN 1308):	0 mm
Total VOC Content:	< 0.05 mg/m^3

2.05 BOND COAT:

A. Bond coat shall be provided in accordance with the thin or thick set manufacturer's requirements.

2.06 EPOXY TILE JOINT GROUT:

A. Epoxy Grout color shall be selected by Owner or Owner's Representative.

B. Epoxy Grout (Industrial) shall be non-flammable, chemical resistant 100% solids epoxy with high temperature resistance, GreenGuard compliant, and meeting the following physical requirements:

Initial Set Time (ANSI A118.5):	Pass (4 hours)

Service Set Time (ANSI A118.5):	Pass (< 7 days)
Shrinkage (ANSI A118.3):	0.07%
Sag (ANSI A118.3):	Pass (No sag)
Shear Bond Strength (ANSI A118.3; quarry tile):	2,200 psi (15.2 MPa)
Compressive Strength (ANSI A118.3):	8,300 psi (57.2 MPa)
Tensile Strength (ANSI A118.5):	3,000 psi (20.7 MPa)
Thermal Shock Resistance (ANSI A118.3):	2,100 psi (14.5 MPa)

1. Cured Epoxy Grout to be chemically and stain resistant to ketchup, mustard, tea, coffee, milk, soda, beer, wine, bleach (3% solution), ammonia, juices, vegetable oil, detergents, brine, sugar, cosmetics and blood, as well as being chemically resistant to dilute food/mineral acids, gasoline and mineral spirits.

2.06 DEPTH MARKERS:

A. The depth of the water shall be plainly marked at the pool's depth, at maximum and minimum points of break between the deep and shallow portions and at 2-foot increments of water depth. Depth markers shall be in numerals of 4-inches minimum height.

B. Depth markers around perimeter of pool, as required: Black lettering on white, non-skid.

C. Install ceramic tile depth markers at appropriate locations as required by code.

PART 3 - EXECUTION

3.01 INSPECTION BEFORE INSTALLATION:

A. Tile installer shall verify that surfaces to be covered with ceramic tile, mosaics, pavers, brick, masonry veneer, stone, trim or waterproofing are:

1. Sound, rigid and conform to good design/engineering practices;

2. Systems, including the framing system and panels, over which tile or stone will be installed shall be in conformance with the International Building Code (IBC) for commercial applications, or applicable building codes. The project design should include the intended use and necessary allowances for the expected live load, concentrated load, impact load, and dead load including the weight of the finish and installation materials. In addition to deflection considerations, above-ground installations are inherently more susceptible to vibration. Consult grout, mortar, and membrane manufacturer to determine appropriate installation materials for above-ground installations.

3. Clean and free of dust, dirt, oil, grease, sealers, curing compounds, laitance, efflorescence, form oil, loose plaster, paint, and scale.

4. For thin-bed ceramic tile installations when a cementitious bonding material will be used, including medium bed mortar: maximum allowable variation in the tile substrate – for tiles with edges shorter than 15-inch (375mm), maximum allowable variation is ¼-inch in 10-feet (6mm in 3m) from the required plane, with no more than 1/16-inch variation in 12-inch (1.5mm variation in 300mm) when measured from the high points in the surface. For tiles with at least one edge 15-inch (375mm) in length, maximum allowable variation is 1/8-inch in 10-feet (3mm in 3m) from the required plane, with no more than 1/16-inch variation in 24-inch (1.5mm variation in 600mm) when measured from the high points in the surface.

5. For thick bed (mortar bed) ceramic and stone tile installations and self-leveling methods: maximum allowable variation in the installation substrate to be ¼-inch in 10-feet (6mm in 3mm).

6. Consult with finish materials manufacturer to determine the maximum allowable moisture content for substrates under their finished material.

7. Dry as per American Society for Testing and Materials (ASTM) D4263 "Standard Test for Determining Moisture in Concrete by the Plastic Sheet Method."

B. Concrete surfaces shall also be:

1. Cured a minimum of 28 days at 70°F (21°C), including an initial seven (7) day period of wet curing;

2. Wood float finished, or better, if the installation is to be done by the thin bed method.

C. Advise Engineer and Owner of any surface or substrate conditions requiring correction before tile work commences. *Beginning of tile work constitutes acceptance of substrate or surface conditions.*

3.02 PREPARATION:

A. Clean substrates of dust, dirt, oil, grease and deleterious substances and mechanically roughen concrete and shotcrete for bond. Conform to applicable Reference Standards and to recommendations of manufacturers of materials used.

B. Substrates to Receive Mortar Setting Beds: Keep cementitious backing damp for at least 8 hours and scrub with neat Portland Cement slurry just prior to placing setting bed mortar.

C. Tile Wetting: Dampen tile according to above Reference Standards or tile manufacturer's instructions, as required.

D. Screeds: Accurately set temporary screeds to control the finish plane of mortar-bed set tile and remove as soon as setting bed is sufficiently hardened. Fill void spaces from screeds with same mortar.

3.03 INSTALLATION – TILE:

A. *General:* Install in accordance with current versions of American National Standards Institute, Inc. (ANSI) "A108 American National Standard Specifications for Installation of Ceramic Tile" and TCNA "Handbook for Ceramic and Stone Tile Installation" Cut and fit ceramic tile, masonry veneer, brick or stone neatly around corners, fittings, and obstructions. Perimeter pieces to be minimum half tile, brick or stone. Chipped, cracked, split pieces and edges are not acceptable. Make joints even, straight, plumb and of uniform width to tolerance +/- 1/16-inch over 8-feet (1.5mm in 2.4m). Install divider strips at junction of flooring and dissimilar materials. Where installation will be subjected to freeze/thaw cycles, snow and ice accumulation, and/or snow melting chemicals, degradation can occur over time.

B. *Thin Bed Method:* Install latex portland cement mortar in compliance with current revisions of ANSI A108.02 (3.11), A108.1B and ANSI A108.5. Use the appropriate trowel notch size to ensure proper bedding of the tile, brick or stone selected. Work the latex portland cement mortar into good contact with the substrate and comb with notched side of trowel. Spread only as much latex portland cement mortar as can be covered while the mortar surface is still wet and tacky. When installing large format (>8-inch x 8-inch/200mm x 200mm) tile/stone, rib/button/lug back tiles, pavers or sheet mounted ceramics/mosaics, spread latex portland cement mortar onto the back of (i.e. 'back-butter') each piece/sheet in addition to trowelling latex portland cement mortar over the substrate. Beat each piece/sheet into the latex portland cement mortar with a beating block or rubber mallet to insure full bedding and flatness. Allow installation to set until firm. Clean excess latex portland cement mortar from tile or stone face and joints between pieces.

C. *Adjusting*: Correction of defective work for a period of one (1) year following Substantial Completion, return to job and correct all defective work. Defective work includes, without limitation, tiles broken in normal abuse due to deficiencies in setting bed, loose tiles or grout, and all other defects which may develop as a result of poor workmanship.

D. Contractor may submit alternate method for expansion joints based on existing conditions and manufacturer's and installer's warranties. An expansion joint shall run continuous through the tile at a location where there is an expansion joint in the concrete. All proposed expansion joint locations shall be indicated on the submitted shop drawings, and shall be submitted to Architect / Engineer for approval.

3.04 CLEANING:

A. Clean excess mortar/epoxy from veneer surfaces with water before they harden and as work progresses. Do not contaminate open grout/caulk joints while cleaning. Sponge and wash veneers diagonally across joints. Do not use acids for cleaning. Polish with clean dry cloth. Remove surplus materials and leave premises broom clean.

3.05 PROTECTION

A. Protect finished installation. Keep all traffic off finished tile floors until they have fully cured. Builder shall provide up to ¾-inch (19mm) thick plywood or OSB protection over non-staining Kraft® paper to protect floors after installation materials have cured. Covering the floor with polyethylene or plywood in direct contact with the floor may adversely affect the curing process of grout and latex/polymer fortified portland cement mortar. Keep traffic off horizontal portland cement thick bed mortar installations for at least 72 hours at 70°F (21°C).

B. Keep floors installed with epoxy adhesive closed to foot traffic for 24 hours @ 70ºF (21ºC), and to heavy traffic for 48 hours @ 70ºF (21ºC) unless instructed differently by manufacturer. Use kneeling boards, or equivalent, to walk/work on newly tiled floors. Cure tile work in Fountains applications for 10 days @ 70ºF (21ºC) for epoxy based grout before flood testing or filling installation with water. Extend period of protection of tile work at lower temperatures, below 60ºF (15ºC), and at high relative humidity (>70% RH) due to retarded set times of mortar/adhesives. Replace or restore work of other trades damaged or soiled by work under this section.

END OF SECTION

SECTION 22 51 00

SWIMMING POOL EQUIPMENT

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Furnish and install complete pool mechanical system as indicated on the drawings and as specified herein, including:

1. Furnish and install pipe fittings and valves as required to plumb the new main drain system.

2. Furnish and install new VGB compliant main drains

3. Furnish and install new Skimmer.

B. Final testing and demonstration to Owner.

C. Provide system start up and operator training by a certified manufacturer's representative. Operator training shall occur until the owner is satisfied with the training.

1.2 RELATED WORK

A. The following divisions contain work that relates to this section:

1. Section 31 00 00, EARTHWORK

1.3 QUALITY ASSURANCE

A. Special attention is directed to the materials, design standards and performance characteristics described in the bidding documents and shown on the Drawings. They establish standards of function, dimension, appearance, durability, design, operational efficiency and performance, and overall quality required of the filter systems.

B. The filter system shall meet all State and local Health code requirements.

C. Due to the specialized nature of the work and products herein, the installation Supervisor of the Manufacturer shall be required to have a minimum of three (3) years of filtration installation experience and show at least five (5) installations of commercial-use pool filtration systems in successful operation for at least two (2) years.

1.4 REFERENCES

A. American National Standards Institute/National Spa and Pool Institute (ANSI/NSPI) ANSI/NSPI 1 - American National Standard for Public Swimming Pools.

B. American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME) A112.19.8 - Suction Fittings for Use in Swimming Pools, Wading Pools, Spas, and Hot Tubs, Includes Addenda A.

C. ASTM International (ASTM):

1. D1784 - Standard Specification for Rigid Polyvinyl chloride (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

2. D1785 - Standard Specification for Polyvinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120.

3. D2564 - Standard Specification for Solvent Cements for Polyvinyl chloride (PVC) Plastic Piping Systems.

4. D2855 - Standard Practice for Making Solvent-Cemented Joints with Polyvinyl chloride (PVC) Pipe and Fittings.

D. International Association of Plumbing and Mechanical Officials (IAPMO).

E. National Fire Protection Association (NFPA) 70 - National Electric Code.

F. National Sanitary Foundation/American National Standards Institute (NSF/ANSI) Standard 50 - Circulation System Components and Related Materials for Swimming Pools, Spas/Hot Tubs.

G. Virginia Graeme Baker Pool and Spa Safety Act VGB 2008.

1.5 SUBMITTALS: IN ACCORDANCE WITH REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING

A. Submittals for Review:

1. Product Data: Manufacturer’s descriptive data, specifications and installation instructions for:

a. Piping.

b. Main Drains, Skimmers, and VGB Covers.

2. Contractor to supply six (6) original hardcopies, or electronic copies upon request to the Engineer for review prior to installation of equipment.

3. Performance Criteria: For products specified by performance criteria only, document conformance with design calculations or past performance records with list of previous installations and contact information.

B. Quality Control Submittals:

1. Certificates of Compliance: Submit certification that pool system complies with requirements of applicable codes, ordinances, rules, and regulations, ANSI/NSPI 1, and ANSI/ASME A112.19.8, and VGB.

C. Closeout Submittals:

1. Operation and Maintenance Data: Include data for pool and pool equipment, and warranty information. Contractor shall supply four (4) complete Operation and Maintenance manuals for all products supplied in this project. The manuals shall be project specific, any general Operation and Maintenance manuals shall be rejected.

2. Maintenance manual shall have a complete system diagrams displaying the valve number, valve function, on specific system, and how to operate the system opening and closing valves.

3. Warranties.

4. Owner's Certificate of Instruction.

1.6 DELIVERY, STORAGE AND HANDLING

A. Store pool system components off ground and protect with waterproof covering.

B. Protect piping and accessories from exposure to ultraviolet and from contact with chemicals that could cause damage or deterioration.

1.7 WARRANTIES

A. Furnish filter and related items manufacturer's limited 1-year warranty against defective materials and workmanship, starting on the date of Substantial Completion.

PART 2 – PRODUCTS

2.1 EQUIPMENT

A. Main Drain:

1. Sumps shall be fabricated of high-density resin. Sumps shall be fitted with waterproofing flanges, hydrostatic relief valves with collection pipes and tamper proof PVC cover grates. All Fittings should be of non-corrosive materials. Maximum opening of grates shall be 3/8-inch with total open areas as required to accommodate specified flow rate at velocity not to exceed 1.5 F.P.S. Load bearing capacity of grating as installed shall be at least 200 pounds per square foot.

2. Open area of grates shall be of 81.3 square inches. Grates shall be manufactured by Lawson, model No MDL-FGD-1212-WT, or approved equal.

3. Furnish and install on 12-inch by 12-inch main drain sump manufactured by Lawson Aquatics, model No Custom, or approved equal.

B. Skimmers

1. Skimmers shall be model no. SP1082, as manufactured by Hayward, or approved equal.

2. Skimmers shall have 2-inch socket outlet connections, providing one port to the filter pump, and one port for the equalizer line.

3. Skimmer covers shall be raised and finished flush with pool deck slab.

4. Each skimmer shall be supplied with one (1) extra strainer basket.

5. Skimmers shall be NSF approved.

6. Each skimmer shall have a skimmer equalizer cover, Model No. 640-394xVP, manufactured by Waterway, providing 11.4 SQ IN of Open area per drain.

2.3 PIPING

A. Valves and Piping:

1. Piping: All materials and equipment shall be new, of best quality for the purpose intended, and shall be clearly marked with the manufacturer's name and nameplate, date, or stamp and rating. As far as practicable, materials and equipment shall be one manufacturer.

2. Polyvinyl Chloride Pipe and Fittings:

a. Provide Class 12454 B polyvinyl chloride pipe for all pipes used for distributing chemical solutions. All pipes shall be Schedule 80.

b. Provide solvent weld type fittings for all chemical solutions distribution systems. A heavy duty industrial grade PVC solvent cement shall be used.

c. CPVC Schedule 80: Type 1, normal impact, NSF approved for solvent welding applications, for exposed piping. CPVC piping shall be used for the heating loop from the supply filtered effluent line to the heat exchanger and the heated effluent return from the heat exchanger back to the filtered effluent line.

3. Flexible connectors:

a. All connections between the chemical proportional feed pumps and the rigid PVC pipe shall be of flexible plastic hose.

b. The hose shall consist of polyester braided reinforced tubing with a minimum rating of 150 psi.

c. All materials, hardware components, and accessories shall be corrosion resistant. They shall be 316 stainless steel, fiberglass, high density resin, or PVC.

4. Cement: ASTM D2564.

5. Provide check and ball valves as required by Hayward.

a. Gate valves three inch (3-inch) and larger shall be PVC stainless steel mounted non-rising stem. Valves shall have flanged ends and shall be designed for a minimum water working pressure of 150 lbs. per square inch.

b. Butterfly Valves: Butterfly valves shall be EPDM seated with PVC disc and stainless steel shaft for chlorinated pool water service. Furnish hand wheel/gear operators on all valves 8-inch and larger and valves indicated as throttle valve service.

c. Check Valves: Provide a corrosion resistant body, EPDM seated wafer type valve with bronze plates and shaft.

d. All valves 3-inch and larger shall be ASAHI EPDM butterfly valves or Hayward industrial PVC valves or approved equal.

e. All valves 3-inch and smaller shall be Spears True Union or approved equal.

6. Valve connections: Suitable for connection of adjoining pipe; of pipe size values.

7. Cement: ASTM D2564.

8. Valve connections: Suitable for connection of adjoining pipe; of pipe size values.

9. Hangers and supports: Sized to project conditions. Shall be stainless steel, or FRP, installed with stainless steel hardware.

10. All pipes shall be vibration isolated with a ½-inch thick neoprene pad between the strap and the pipe.

11. All valves shall be tagged and numbered with a 2-inch polyethylene identification tag coordinated into the O&M at the conclusion of the project.

12. All piping shall be identified with pipe labeling. Piping shall be marking indicating the direction of flow, and what vessel the filtered water is coming from. Labels shall be polyethylene pipe identification, shall be snap on and secured to the associated piping. Pipe labels shall be manufactured by Seton, or approved equal. Stickers or permanent marker shall be rejected.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. Install equipment and system in accordance with manufacturer's instructions and approved shop drawings.

B. Set equipment on secure foundations.

C. Make piping joints in accordance with ASTM D2855.

D. Support overhead piping and at connections to valves, pumps, and equipment.

E. Install electrical components in accordance with NFPA 70.

3.2 FIELD QUALITY CONTROL:

A. Water Treatment:

1. Submit chemical analysis of source water supply showing:

a. Total alkalinity in PPM.

b. Calcium hardness in PPM.

c. Chlorine in PPM.

d. pH.

e. Iron and Phosphorus.

2. Treat and balance pool water just prior to Substantial Completion.

a. Establish total alkalinity of 80 to 150 PPM and calcium hardness of 175 to 250 PPM.

b. Balance pool water to local health code requirements.

c. Contractor shall furnish all balancing chemical and labor to balance and maintain the pool(s) and spray deck prior to acceptance by the board of health.

3.3 ADJUSTING:

A. Adjust pool system for proper operation through all cycles.

3.4 CLEANING:

A. Clean equipment, and related surfaces.

3.5 DEMONSTRATION:

A. Demonstrate proper operation and maintenance of pool systems to Owner.

3.6 TESTING:

A. All piping shall be pressured tested to 35 psi, for duration of 3 hours. The test shall be witnessed by the Owner, or Owner Representative. If the test fails, the repair must be performed, and a new test shall be performed. Pressure shall be maintained on the piping until the system is commissioned.

3.7 PROTECTION, MANUALS AND INSTRUCTIONS:

A. Protection: The Pool Contractor shall use whatever methods are required to protect pool equipment from deterioration during remainder of the construction period.

B. Manuals and Instructions: Start up, test, and operate the completed system to verify its performance in compliance with Contract Documents, and to meet approval of governing authorities. Coordinate pool-filling schedule with work of other Sections and, after finish work is cured, circulate and treat water until Owner accepts installation.

1. Provide complete operating and maintenance manuals for pool and equipment. Provide four (4) sets.

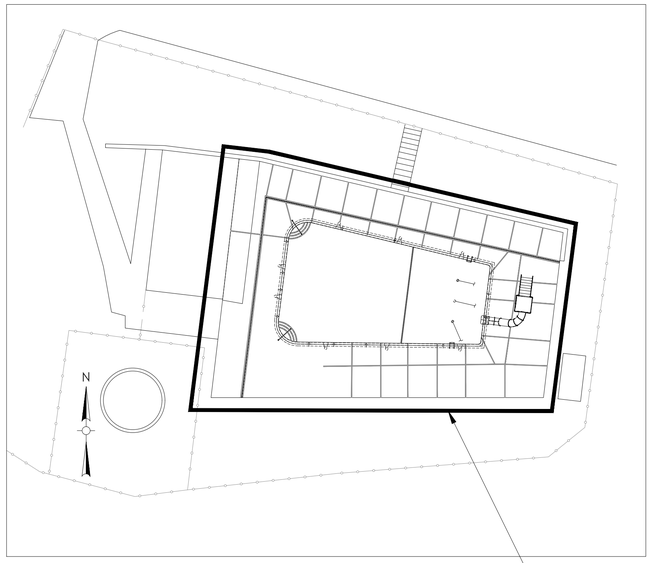
2. After approval of submission of manuals, instruct Owner's personnel in the operation, use and maintenance of the entire installation and each operating element, for a total of 16 hours with selected manufacturers' training representatives. Final acceptance will not be made until training is complete to Owner's satisfaction.

3. Provide Warning Rules and Regulations sign as required by Federal, State, OSHA, and Local code, and Health Codes.

4. Provide four (4) packages of items above.

5. Contractor shall, operate the system until acceptance and approval by health department.

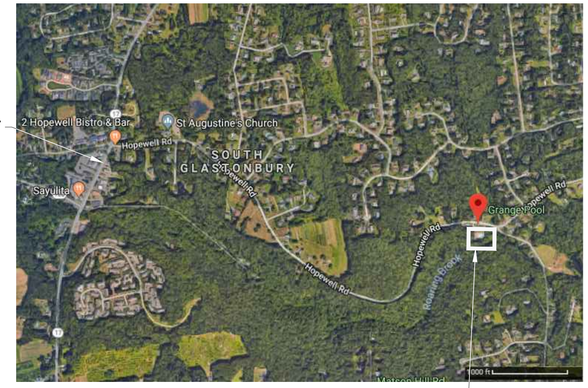
END OF SECTION



SITE PLAN
N.T.S

LOCATION OF SITE

TOWN OF GLASTONBURY



LOCATION OF SITE

Grange Swimming Pool Repair
500 Hopewell Rd
Glastonbury, CT 06073

02/11/19

LIST OF DRAWINGS	
SP0.0	NOTES
SP1.0	SITE DEMOLITION
SP2.0	PROPOSED PLAN AND SECTION
SP3.0	GENERAL DETAILS

Weston & Sampson SM

273 Dividend Road,
Rocky Hill, CT 06067
Tel: (860) 543-1473
Tel: (800) SAMPSON

FACILITY ADDRESS:
GRANGE SWIMMING POOL
500 HOPEWELL RD
GLASTONBURY, CT 06073

OWNER:
TOWN OF GLASTONBURY PARKS AND RECREATION
2143 MAIN STREET
GLASTONBURY, CT 06033

ALL DRAINS SHALL BE IN ACCORDANCE WITH THE "Virginia Graeme Baker Pool and Spa Safety Act" AND COMPLY WITH ANSI, ASME, AND APSP STANDARDS FOR MAIN DRAINS INCLUDING, UV, FINGER ENTRAPMENT, HAIR ENTANGLEMENT, BODY ENTRAPMENT, AND PIPE AND GRATE SIZING.

THE ELECTRICAL CONTRACTOR SHALL GROUND AND BOND ALL ELECTRICAL EQUIPMENT, SPLASH PAD REINFORCING, POOL ACCESSORIES, AND PIPING IN ACCORDANCE WITH NATIONAL ELECTRIC CODE REQUIREMENTS, ARTICLE 680. THE ELECTRICAL CONTRACTOR SHALL OBTAIN A COPY OF ALL APPLICABLE LOCAL STATE ELECTRICAL CODE REGULATIONS.

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STATE OF CONNECTICUT — CHRISTOPHER B. WILLIAMS — 17478 — LICENSED PROFESSIONAL ENGINEER

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Drawing Title:

COVER

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COVER

DESIGN CODE COMPLIANCE:

19-13-B33b, PUBLIC POOLS CONNECTICUT MINIMUM STANDARDS FOR SWIMMING POOLS.....09/21/2004
CONNECTICUT PUBLIC SWIMMING POOL DESIGN GUIDE.....1/2010
AMERICAN NATIONAL STANDARDS FOR PUBLIC POOLS - ANSI/NSPI-1.....2003
NATIONAL ELECTRICAL CODE(NFPA 70).....2014
VIRGINIA GRAEME BAKER POOL AND SPA SAFETY ACT.....2008
ADAAG.....2010

ENGINEER SEAL:

1. THESE DRAWINGS HAVE BEEN PREPARED FOR EXCLUSIVE USE FOR THE CLIENT AND ARE NOT INTENDED FOR ANY OTHER PURPOSE. TO THE BEST OF MY KNOWLEDGE, THESE DRAWINGS MEET THE REQUIREMENTS SET FORTH BY THE CONNECTICUT DEPARTMENT OF PUBLIC HEALTH (DPH).

2. THE POOLS THAT ARE INCORPORATED INTO THESE DRAWINGS MUST BE CONSTRUCTED IN STRICT ACCORDANCE WITH THE APPROVED DRAWINGS IN ORDER TO QUALIFY FOR A DPH OPERATING PERMIT. ALL CHANGES MUST HAVE WRITTEN APPROVAL FROM WESTON & SAMPSON AND DPH PRIOR TO SUCH CHANGE OR ALTERATION BEING IMPLEMENTED.

3. ONLY DRAWINGS FROM WESTON & SAMPSON THAT ARE MARKED "FOR CONSTRUCTION" AND WITH THE DPH APPROVAL NUMBERS AND APPROVAL DATES AFFIXED SHALL BE USED FOR THE POOL CONSTRUCTION IMPLEMENTATION.

DEFINITIONS:

1. CONTRACTOR: IN ACCORDANCE WITH CONNECTICUT GENERAL STATUTES SECTION 20-341D-1 THROUGH 20-341D-3 FOR SWIMMING POOL BUILDERS AND CONTRACTORS AS REGULATED BY THE DEPARTMENT OF CONSUMER PROTECTION, THE PERSON OR ENTITY LICENSED BY THE STATE OF CONNECTICUT AS A "SWIMMING POOL BUILDER" (SPB) SHALL BE AUTHORIZED TO CONSTRUCT, INSTALL A COMMERCIAL POOL, SPA AND THEIR APPURTENANCES. IN ACCORDANCE WITH CONNECTICUT GENERAL STATUTE SECTION 20-417AA-1, THE PERSON OR ENTITY LICENSED BY THE STATE OF CONNECTICUT AS A "LIMITED SWIMMING POOL CONTRACTOR".

2. CRITICAL: THIS WORD DESCRIBES DIMENSIONS THAT SHALL NOT BE SUBJECT TO DEVIATION OR ERRORS FOR ANY REASON. VIOLATION OF A CRITICAL DIMENSION MIGHT SUBJECT THE POOL TO A POTENTIAL VARIANCE ACTION OR A PERMANENT WITHHOLDING OF A FUTURE OPERATING CERTIFICATE. WESTON & SAMPSON CONSIDERS ALL DIMENSIONS CONTAINED WITH THE DRAWINGS AS VITAL; HOWEVER, THE WORD CRITICAL IS ADDED TO ATTRACT THE ATTENTION OF THE CONTRACTOR.

3. POOL: THE USE OF THE WORD POOL WITHIN THESE NOTES MAY ALSO REFER TO A POOL OR KIDDIE POOL. PROVIDE WRITTEN QUESTIONS TO THE ENGINEER FOR CLARIFICATIONS.

4. PROVIDE: OBTAIN, PURCHASE, SUPPLY, INSTALL, COMMISSION AND WARRANTY COMPLETELY IN ACCORDANCE WITH ALL CODES, RULES, REGULATIONS AND THE REQUIREMENTS OF THE DRAWINGS AND TECHNICAL SPECIFICATIONS.

5. RAIL: REFERS TO A HANDRAIL, LADDER, OR GRAB RAIL LOCATED AT A POOL. IT PROVIDES BATHER SUPPORT ASSISTANCE WHEN ENTERING OR EXITING A POOL.

6. SLIP-RESISTANT: A HORIZONTAL, NON-SKID TEXTURED SURFACE WITH A COEFFICIENT OF FRICTION RATED AT A MINIMUM 0.6. THE RESPONSIBILITY FOR VERIFICATION AND CONFIRMATION OF COMPLIANCE WITH THIS FRICTION REQUIREMENT IS SOLELY THAT OF THE CONTRACTOR. CERTIFIED MANUFACTURER BROCHURES MAY BE SUBMITTED TO WESTON & SAMPSON FOR APPROVAL. THE TERM "NON-SLIP" SHALL BE CONSIDERED THE SAME AS "SLIP-RESISTANT".

7. VISUAL BARRIER: A CLOSELY-PLANTED, DENSE GROUPING OF PLANTS OR APPROVED ARCHITECTURAL BARRIER THAT IS 42-INCHES HIGH MINIMUM.

GENERAL CONSTRUCTION REQUIREMENTS:

1. THE MINIMUM VERTICAL CLEARANCE ABOVE POOL WATER AND DECK IS 7 FEET.

2. POOL WALL / FLOOR INSTALLATION DIMENSIONAL REQUIREMENTS:
   A. THE UPPER PART OF THE POOL WALLS IN AREAS OF 5 FEET DEPTH OR LESS SHALL BE WITHIN 5 DEGREES OF VERTICAL FOR A MINIMUM DEPTH OF 2.5 FEET AND THE RADIUS JOINING THE UPPER SECTION OF THE FLOOR SHALL NOT EXCEED 2.5 FEET.
   B. THE UPPER PART OF THE POOL WALLS OVER 5 FEET DEEP SHALL BE WITHIN 5 DEGREES OF VERTICAL FOR A MINIMUM DEPTH EQUAL TO THE POOL DEPTH MINUS 2.5 FEET AND THE RADIUS JOINING THIS UPPER SECTION TO THE FLOOR SHALL NOT EXCEED 2.5 FEET.

3. REFER TO THE POOL DRAWINGS FOR FINISHING SURFACING MATERIALS FOR WALLS, FLOOR, AND COPING. FINISH COLORS, AND MATERIALS ARE SPECIFIED IN THESE DRAWINGS. THE INTERIOR SURFACE SHALL BE REFLECTIVE AND SLIP-RESISTANT IN NATURE TO ASSIST IN THE VIEWING OF PERSONS UNDERWATER. UNLESS OTHERWISE NOTED HEREIN, A MAXIMUM OF 0.5-INCHES SHALL BE PROVIDED FOR INTERIOR FINISHES FROM THE BEAM, WALLS, AND FLOORS OF THE POOL.

4. ALL DECKS THAT ARE LESS THAN 4-FT. WIDE SHALL BE OBSTRUCTED TO ASSIST IN PREVENTING BATHER'S ACCESS.

DECKING:

1. FINALIZE ALL DECK ELEVATIONS AT THE PROJECT SITE TO ALLOW FOR ADJACENT ELEVATIONS FOR OTHER STRUCTURES AND APPURTENANCES. PROVIDE THE ENGINEER A WRITTEN NOTICE OF ANY CHANGES OR REVISIONS NEEDED FOR DRAWING AND DOH COMPLIANCE.

2. SLOPE ALL DECKING AWAY FROM THE POOL AT A MINIMUM 2% (2.4-INCHES PER 10-FEET) AND A MAXIMUM 4% (4.8-INCHES PER 10-FEET).

3. POOL DECKS SHALL BE CONSTRUCTED OF IMPERVIOUS MATERIAL WITH SLIP RESISTANT FINISH.

4. THE FIRST 15-FEET OF DECK WALKWAY FROM THE POOL TOWARD THE POOL REST ROOMS SHALL ALSO BE OF A SMOOTH, NON-ABSORBENT, AND SLIP-RESISTANT MATERIAL.

5. INSTALL NO WOOD DECKING, WOOD EXPANSION JOINTS, RESILIENT SURFACES (SAF-DEK OR SIMILAR PRODUCTS), OR CARPETING IN DECK AREAS REGULATED BY DOH.

6. MINIMUM DECK WIDTH SHALL NOT BE LESS THAN 4 FOOT WIDE. WHEN THE COPING IS RAISED ABOVE THE DECK, THE CLEARANCE SHALL BE MEASURED FROM THE BACK OF THE COPING, HANDRAIL OR LADDER.

7. POOL DECK SHALL HAVE AN UNOBSTRUCTED WIDTH OF 4 FEET AROUND ENTIRE PERIMETER OF POOL AND HANDRAILS. PITS AND CREVICES MORE THAN 3/16-INCH ARE NOT PERMITTED.

8. THE VERTICAL CLEARANCE ABOVE THE POOL DECK SHALL BE A MINIMUM OF 7 FEET.

STRUCTURAL NOTES AND RESTRICTIONS:

1. THE SOIL / EARTH BENEATH EACH POOL AND ITS DECKING SHALL HAVE A SOIL DENSITY AND COMPACTION OF 95% MINIMUM OF THE OPTIMUM MODIFIED STANDARD PROCTOR TEST. NO DEFLECTIONS OR SETTLEMENT OF THE SOILS ARE PERMISSIBLE.

2. PROVIDE ALL REINFORCING STEEL (NEW AND FREE FROM RUST OR SCALE) WITHIN THE POOLS AND SPA AS:
   a. GRADE #60, #4 REBARS, UNLESS OTHERWISE NOTED.
   b. REBARS SHALL BE SPACED AT 12-IN O.C.B.W.
   c. TIE ALL REBARS AT ALTERNATE INTERSECTIONS.
   d. MINIMUM OVERLAP FOR ALL REBARS SHALL BE 40-BAR DIAMETERS OR 15-INCHES (WHICHEVER IS GREATER).

3. COVER ALL REINFORCING STEEL WITH A MINIMUM 3-INCHES OF CONCRETE.

4. THE REINFORCING INDICATED IS ADEQUATE ONLY WHERE THE BACKFILL IS A WELL-DRAINED, GRAVELLY MATERIAL.

5. THE POOL STRUCTURE SHALL BE 4,000-PSI CONCRETE AT 28 DAYS. THE CONCRETE MIX DESIGN SHALL PROVIDE A 0.45 WATER/CEMENT RATIO AND CONTAIN NO ADMIXTURES UNLESS PRE-APPROVED BY THIS ENGINEER.

6. THE ENTIRE CONCRETE STRUCTURE SHALL BE MAINTAINED IN A DAMPENED OR WATER-IMMERSED CONDITION FOR A MINIMUM 7-DAYS AFTER PLACEMENT TO ASSIST IN PROVIDING PROPER CURING.

7. PROVIDE A WATER-TIGHT, LEAK-PROOF STRUCTURE. IN ACCOMPLISHING A WATER-TIGHT STRUCTURE, PROVIDE THE FOLLOWING PROCEDURES AND PRACTICES:
   a. FILL AROUND EACH FITTING AND NICHE WITH A NON-SHRINK, EXPANSIVE GROUT.
   b. AVOID HONEYCOMBING. ANY HONEYCOMBING DISCOVERED SHALL BE CHIPPED, CLEANED AND CORRECTED AS REQUIRED BY PROJECT ARCHITECT OR ENGINEER.
   c. INSTALL THE POOL BEAM STRUCTURE SO THAT THE TOP OF THE POOL BEAM IS AT LEAST 2-INCHES ABOVE THE NORMAL WATER ELEVATION.

8. THE POOL STRUCTURE(S) IS NOT DESIGNED TO WITH STAND HYDROSTATIC UPLIFT OR GROUND-WATER CONDITIONS THAT COULD CAUSE FLOATING OF THE STRUCTURE. THE HYDROSTATIC RELIEF VALVES AND/OR POOL PLUGS SPECIFIED SHALL BE PROVIDED TO ASSIST IN THIS AREA OF CONCERN. PROVIDE THE EXACT LOCATION OF THE HYDROSTATIC RELIEF VALVES ON THE OFFICIAL "AS-BUILT" RECORD SET OF DRAWING SUBMITTALS.

9. LOCATE 1-CUBIC FOOT OF 3/4-INCH CRUSHED STONE BENEATH EACH HYDROSTATIC RELIEF PLUG.

10. PUNCTURE THE VAPOR BARRIER AT EACH HYDROSTATIC RELIEF LOCATION.

11. PROVIDE A 6-INCH MINIMUM ROCK THICKNESS BENEATH THE POOL FLOOR (THIS THICKNESS MAY BE INCREASED TO A GREATER THICKNESS DEPENDING ON GROUND WATER ENCOUNTERED).

12. PROVIDE A DEADLINE-TYPE DEWATERING PIPE FROM THE ROCK BED BELOW THE MAIN DRAIN SUMP TO THE SURFACE FOR FUTURE ACCESSIBILITY AND TO ASSIST IN SAFELY REMOVING THE WATER FROM THE POOL. PROVIDE AT LEAST ONE SUCH DEWATERING DEVICE ON EACH POOL.

13. PROVIDE A VALVE BOX AT THE SURFACE-END OF THE DEADLINE DEWATERING PIPE TO ASSIST IN LOCATING THIS PIPE IN THE FUTURE. PROVIDE THE EXACT LOCATION OF THE DEWATERING VALVE BOXES ON THE OFFICIAL "AS-BUILT" RECORD SET OF DRAWING SUBMITTALS.

DEPTH MARKERS:

1. PERMANENT DEPTH MARKERS SHALL BE PLACED ON THE UPPER-MOST POOL WALLS AND DECK EDGE AT THE SHALLOW-END, SLOPE BREAK, AND DEEP END AREAS OF THE POOL PER THE REQUIREMENTS OF THESE DRAWINGS. ADDITIONAL DEPTH MARKINGS SHALL BE PLACED TO MAINTAIN A MAXIMUM 25-FOOT SPACING BETWEEN ALL MARKINGS. THE LETTERING SHALL BE A CONTRASTING COLOR TO THE BACKGROUND.

2. EACH DEPTH MARKING AND "NO DIVING" MARKING LOCATED ON THE DECK SURFACE (WITHIN 2-FEET OF THE WATER'S EDGE) SHALL BE OF A SLIP-RESISTANT MATERIAL, SHALL BE 4-INCH HIGH, NOT TO EXCEED SPACING OF 25-FEET AROUND POOL AND BE CONTRASTING IN COLOR. AN APPROVED UNIVERSAL "NO DIVING SYMBOL" (USING THE COLOR "RED") MAY BE SUBSTITUTED FOR THE ABOVE "NO DIVING" MARKING. THE ASSOCIATED DEPTH AND NO DIVING MARKERS SHALL BE PRESENT ON THE WATERLINE LINE OF THE POOL.

3. THE MINIMUM LETTER HEIGHT OF EACH DEPTH MARKING SHALL BE 4-INCHES.

4. THE ONLY AUTHORIZED ABBREVIATION FOR "FEET", "INCHES", AND "METERS" SHALL BE "FT", "IN" AND "M" RESPECTIVELY.

5. ALL DEPTH MARKINGS SHALL BE LOCATED TO ACCURATELY DEPICT THE ACTUAL WATER DEPTH WITHIN 3-INCHES PROPER DETERMINATION OF THIS RULE COMPLIANCE SHALL REQUIRE MEASURING THE WATER DEPTH AT A LOCATION 3-FEET HORIZONTAL FROM THE VERTICAL WALL DEPTH MARKING.

6. THE DEPTH AT THE DEEPEST POINT/MAIN DRAIN GRATE SHALL NOT DEVIATE MORE THAN 3-INCHES FROM THE SIDEWALL DEPTH MARKINGS AT THAT LOCATION.

PIPING INSTALLATION REQUIREMENTS:

1. THE PIPING DIAGRAMS, PLACEMENTS, AND LAYOUTS SHOWN IN THESE DRAWINGS SHALL BE FOLLOWED WITHOUT EXCEPTION UNLESS WRITTEN AUTHORIZATION FROM THIS ENGINEER IS PROVIDED.

2. THE PIPING SYSTEMS INDICATED IN THESE DRAWINGS ARE SHOWN IN A DIAGRAMMATIC VIEW ONLY. THE CONTRACTOR SHALL PROVIDE ALL PIPING AND FITTINGS REQUIRED FOR THE COMPLETE INSTALLATION.

3. THE CONTRACTOR SHALL PROVIDE AND COMPLY WITH ALL PIPING INSPECTIONS THAT MAY BE REQUIRED BY DEPARTMENT OF HEALTH AND LOCAL BUILDING OFFICIALS.

4. THE CONTRACTOR SHALL PROVIDE PIPE HANGER DETAILS TO THE ENGINEER FOR WRITTEN APPROVAL PRIOR TO THE INSTALLATION.

5. PIPING PRESSURE TESTING SHALL BE COORDINATED BY THE CONTRACTOR AND SHALL BE CONSIDERED INCIDENTAL TO THE WORK OF THE CONTRACT. THE ENGINEER SHALL BE ONSITE DURING PRESSURE TESTING. ALL PIPING SHALL CONFORM TO ACCEPTED WORKMANSHIP STANDARDS AND SHALL BE TESTED AS FOLLOWS:
   A. ALL PRESSURE PIPING MUST BE TESTED BY MEANS OF WATER PRESSURE TO A MINIMUM OF 35 P.S.I. FOR 3 HOURS PRIOR TO BACKFILLING OR FILLING OF THE PLUMBING TRENCHES. MAINTAIN THE PRESSURE TEST ON THE PIPING SYSTEM THROUGHOUT THE PROJECT UNTIL SYSTEM IS COMMISSIONED.

THE ELECTRICAL CONTRACTOR SHALL GROUND AND BOND ALL ELECTRICAL EQUIPMENT, SPLASH PAD REINFORCING, POOL ACCESSORIES, AND PIPING IN ACCORDANCE WITH NATIONAL ELECTRIC CODE REQUIREMENTS, ARTICLE 680. THE ELECTRICAL CONTRACTOR SHALL OBTAIN A COPY OF ALL APPLICABLE LOCAL STATE ELECTRICAL CODE REGULATIONS.

Project:

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CHRISTOPHER B. WESTON
17476
LICENSED
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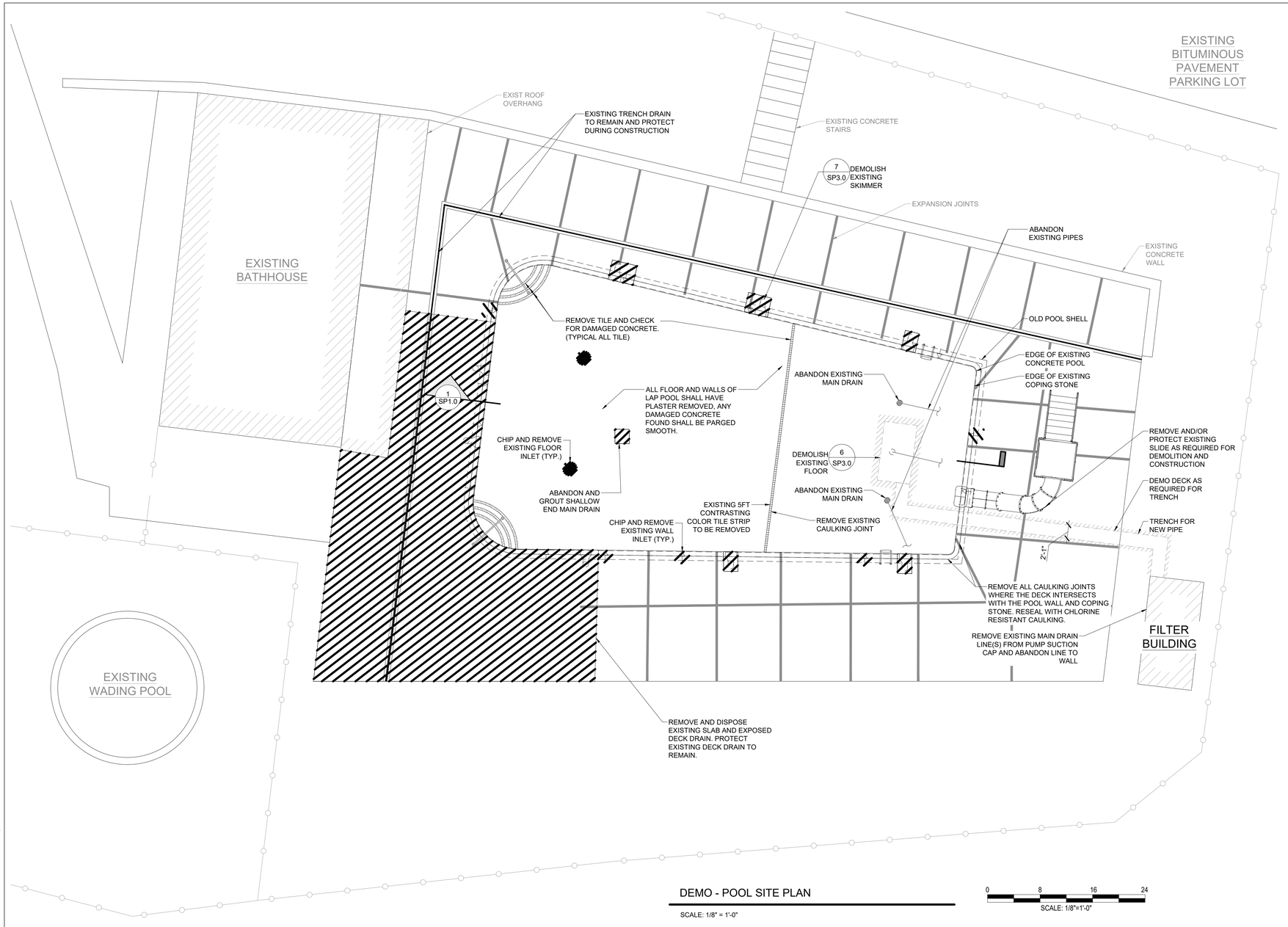
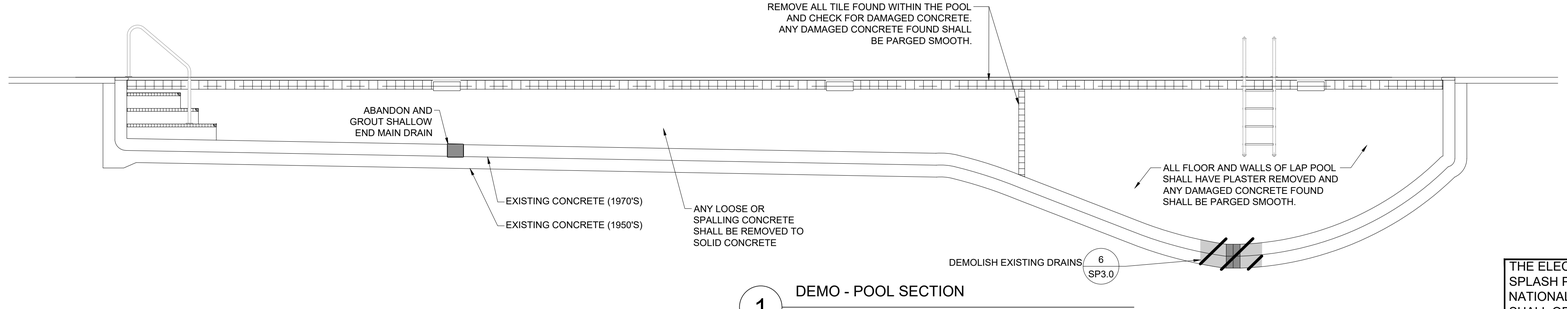


DEMO - POOL SITE PLAN

SCALE: 1/8" = 1'-0"

0 8 16 24

SCALE: 1/8"=1'-0"



1 DEMO - POOL SECTION

SCALE: 1/4" = 1'-0"

NOTE:
1. REMOVE CAULKING JOINT(S) FOUND BETWEEN THE SHALLOW END AND THE DEEP END OF THE POOL.
2. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGES DONE TO THE POOL AND/OR FILTRATION SYSTEM DURING CONSTRUCTION. ANY COST ASSOCIATED WITH THESE DAMAGES SHALL BE AT THE EXPENSE OF THE CONTRACTOR.
3. CONTRACTOR SHALL PRESSURE TEST RETURN PIPING AND SKIMMER PIPING. CONTRACTOR SHALL LOCATE AND REPAIR LEAKS. CONTRACTOR SHALL PROVIDE AN ALLOWANCE TO FIX UP TO (4) LEAKS. THIS SHALL BE INDICATED IN THEIR PROPOSAL OR BID FORM.
4. CONTRACTOR SHALL PROVIDE UP TO 100 S.F. OF MISC. DECK PATCHING REPAIR. AREA SHALL BE DETERMINED BY PARKS DEPARTMENT PRIOR TO EXECUTION.

THE ELECTRICAL CONTRACTOR SHALL GROUND AND BOND ALL ELECTRICAL EQUIPMENT, SPLASH PAD REINFORCING, POOL ACCESSORIES, AND PIPING IN ACCORDANCE WITH NATIONAL ELECTRIC CODE REQUIREMENTS, ARTICLE 680. THE ELECTRICAL CONTRACTOR SHALL OBTAIN A COPY OF ALL APPLICABLE LOCAL STATE ELECTRICAL CODE REGULATIONS.

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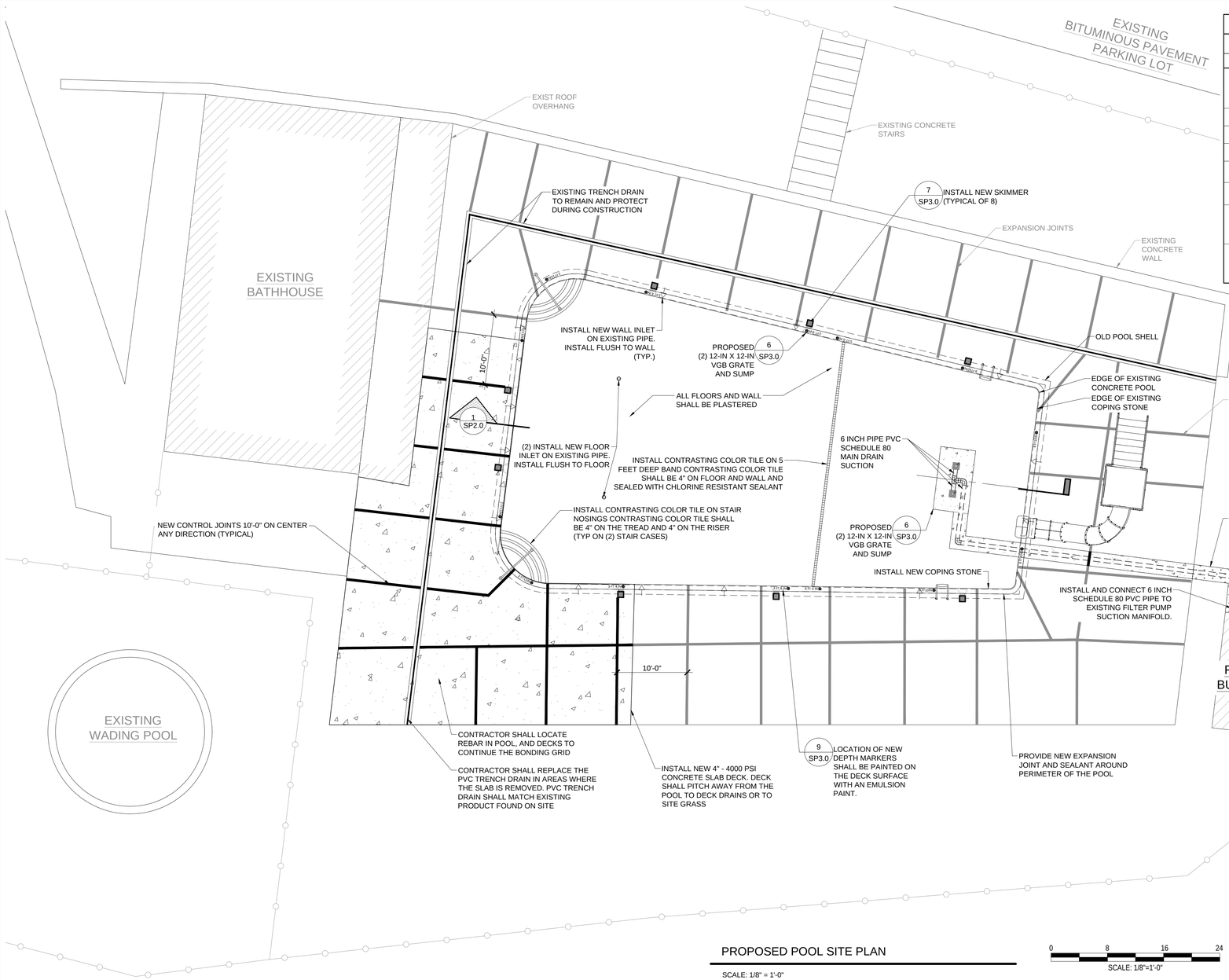
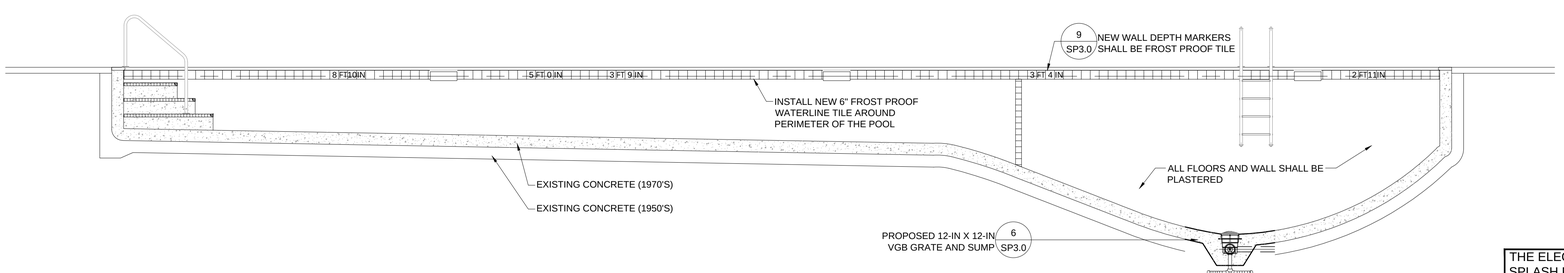


PROPOSED POOL SITE PLAN

SCALE: 1/8" = 1'-0"

0 8 16 24

SCALE: 1/8"=1'-0"



1 POOL SECTION

SCALE: 1/4" = 1'-0"

POOL EQUIPMENT SCHEDULE				
PERIMETER OVERFLOW AND RECIRCULATION SYSTEM				
QTY	ITEM	MANUFACTURER	CAT NO.	DESCRIPTION
2	MAIN DRAIN GRATE & SUMP	LAWSON AQUATICS	MLD-FG-1212-WT	12-INCH BY 12-INCH PVC SUMP/GRATE DOMED WITH 4-INCH SIDE PORT. COMPLY WITH ASME/ANSI A112.19.8-2007 UNBLOCKABLE REQUIREMENTS. OPEN AREA PROVIDED 81.30 SQ. IN., 223 GPM.
2	HYDROSTATIC VALVE	HAYWARD	SP1056	HYDROSTATIC RELIEF VALVE
2	COL.TUBE	HAYWARD	SP1055	COMMERCIAL COLLECTOR TUBE
8	SKIMMER	HAYWARD	SP1082	NSF APPROVED SKIMMER, EQUALIZER, 2-INCH SLIP, FLAP WEIR
2	FLOOR INLET COVER	HAYWARD	SP1425	FLOW ADJUSTABLE, FLUSH MOUNTED FLOOR INLET, 1 1/2-IN SLIP BY 2-IN MPT CONNECTION.
18	WALL INLETS	HAYWARD	SP1419D	FLOW ADJUSTABLE, FLUSH MOUNTED 3/4-IN. ORIFICE WALL INLET, 1 1/2-IN SLIP
1	WEDGE ANCHORS	SR SMITH	AS-104MG	4-INCH STAINLESS STTEL ANCHOR ASSEMBLY FOR 1.90 INCH O.D. COMMERCIAL RAILS, SOCKET WITH GROUNDING LUG, EACH SOCKET SHALL BE PROPERLY GROUNDED IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE STANDARDS.
8	EQUALIZER	WATERWAY	640-394XVP	5.25 INCH ROUND PVC GRATE COMPLY WITH ANSI/APSP 16-2011 AND NSF 50-2009a UNBLOCKABLE REQUIREMENTS INCLUDING SUMP WITH BOTTOM PORT. OPEN AREA PROVIDED 11.4 SQ IN PER DRAIN.

NOTES:
1. CONTRACTOR SHALL PROVIDE AN ALLOWANCE OF UP TO 100 SF OF DECK REPAIRS. REPAIRS SHALL BE PERFORMED IN ACCORDANCE WITH DETAIL #2 ON SP 3.0.
2. INTERIOR POOL CONCRETE REPAIRS SHALL BE PATCHED WITH SPECIFIED PATCH MATERIAL FOUND IN SPECIFICATION 03 01 30.62
3. CONTRACTOR SHALL FIELD VERIFY DEPTH PRIOR TO ORDERING AND INSTALLATION FLOOR AND WALL DEPTH MARKERS.
4. CONTRACTOR SHALL REINSTALL ANY DECK OVER ANCHORS REMOVED DURING SLAB REPLACEMENT.
5. CONTRACTOR SHALL CHIP AND REPLACE ALL WALL AND FLOOR INLETS IN THE POOL.
6. CONTRACTOR SHALL BALANCE POOL, FURNISHING ALL CHEMICALS, AND LABOR UNTIL HEALTH DEPARTMENT HAS FORMALLY ACCEPTED THE POOL FOR SEASONAL USE.
7. CONTRACTOR SHALL INSTALL NEW PVC DECK DRAIN IN SECTIONS WHERE THE SLAB IS TO BE REPLACED WITH SIMILAR TRENCH MATERIAL.

THE ELECTRICAL CONTRACTOR SHALL GROUND AND BOND ALL ELECTRICAL EQUIPMENT, SPLASH PAD REINFORCING, POOL ACCESSORIES, AND PIPING IN ACCORDANCE WITH NATIONAL ELECTRIC CODE REQUIREMENTS, ARTICLE 680. THE ELECTRICAL CONTRACTOR SHALL OBTAIN A COPY OF ALL APPLICABLE LOCAL STATE ELECTRICAL CODE REGULATIONS.

Project:

TOWN OF GLASTONBURY

Grange Swimming Pool Repair
500 Hopewell Rd
Glastonbury, CT 06073

Weston & Sampson

Weston & Sampson Architects, Inc.
273 Dividend Road,
Rocky Hill, CT 06067
860.513.1473 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:

Rev	Date	Description

Seal:

STATE OF CONNECTICUT — CHRISTOPHER B. WESTER — 17476 — LICENSED PROFESSIONAL ENGINEER — EXPIRATION DATE: SEPTEMBER 30, 2020

CONSTRUCTION DOCUMENTS

Date:	02.11.2019
Scale:	AS NOTED
Drawn By:	SAA
Reviewed By:	MPM
Checked By:	MPM
Approved By:	CBW

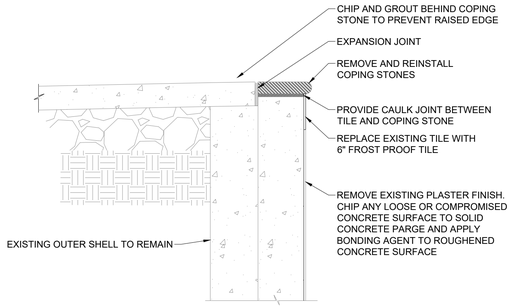
Drawing Title:

PROPOSED PLAN AND SECTION

Sheet Number:

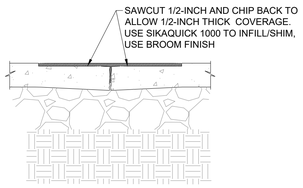
SP2.0

\\wse03.local\WSE\Projects\CT\Glastonbury, CT\218XXXX - Grange Pool Repairs\CADART\0-Current_Set\Sheets\SP2.0 PROPOSED PLAN AND SECTION.dwg



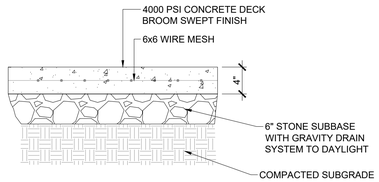
1 POOL WALL AND COPING

SCALE: NOT TO SCALE



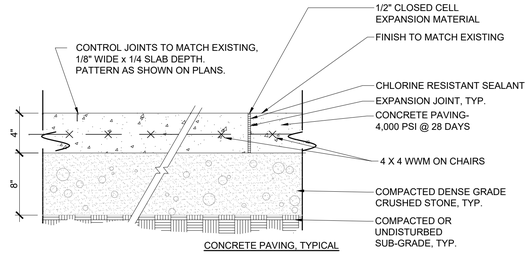
2 EXISTING DECK REPAIR

SCALE: NOT TO SCALE



3 NEW DECK

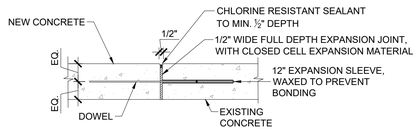
SCALE: 3/4" = 1'-0"



CONCRETE PAVING, TYPICAL

4 NEW CONCRETE TO EXISTING SLAB

SCALE: NOT TO SCALE



EXPANSION JOINT, TYPICAL

EXPANSION JOINT INSTALLATION NOTES:

1. DOWEL IS TYPICAL AT ALL EXPANSION JOINTS (18" O.C.) WITHIN CONCRETE PAVING AND BETWEEN CONCRETE PAVING AND CONCRETE STAIRS.
2. DELETE EXPANSION SLEEVE AND DOWEL WHERE JOINT ABUTS WALL, CURBS, OR OTHER VERTICAL SURFACES.
3. EXPANSION JOINTS MAX. 20'-0" O.C. UNLESS SHOWN OTHERWISE.

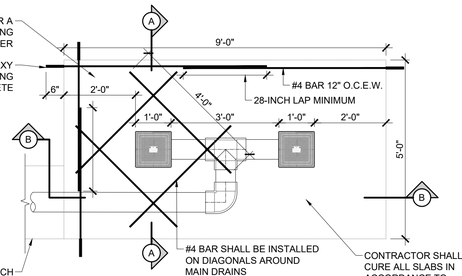
5 NEW EXPANSION JOINT

SCALE: NOT TO SCALE

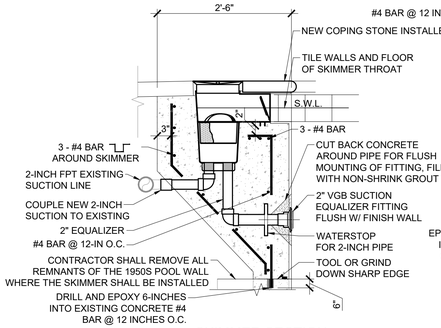
CONTRACTOR SHALL ALLOW FOR A MINIMUM OF 7 DAYS OF CURING PRIOR TO INSTALLATION OF PLASTER

DRILL AND TWO PART EPOXY 6-INCHES INTO EXISTING CONCRETE

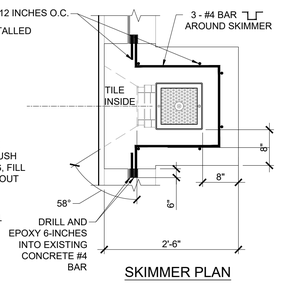
Lawson Aquatics (MLD-SG-1212-WT)	
2	QTY
81.30	SQIN
1.13	SQFT (OPEN AREA)
223	GPM
0.50	CFS
0.44	FPS



PLAN VIEW



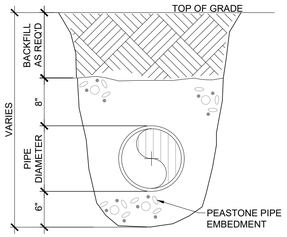
SKIMMER SECTION



SKIMMER PLAN

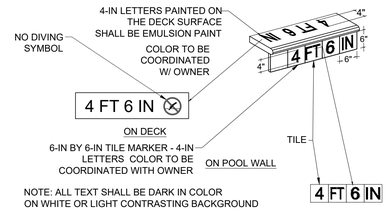
7 NEW SKIMMER

SCALE: 3/4" = 1'-0"



8 TRENCH

SCALE: NOT TO SCALE



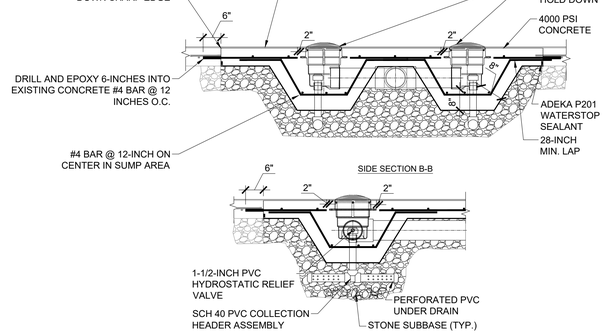
NOTE: ALL TEXT SHALL BE DARK IN COLOR ON WHITE OR LIGHT CONTRASTING BACKGROUND

NOTE:

1. ALL DEPTH MARKERS SHALL SAY: __FT __IN
2. NO DIVING SHALL BE NO DIVING SYMBOL OR SAY: NO DIVING
3. DECK TILE REQUIRED TO BE NON-SLIP
4. DEPTH MARKER DEPTHS SHALL BE FIELD VERIFIED PRIOR TO ORDERING AND INSTALLATION.

9 NEW DEPTH MARKER

SCALE: 1/2" = 1'-0"



SIDE SECTION B-B

SIDE SECTION A-A

NOTE:
1. ALL MAIN DRAINS, MAIN DRAIN GRATES, MAIN DRAIN PIPING ARE DESIGNED AND WILL BE BUILT ACCORDING TO THE *VIRGINIA GRAEME BAKER POOL & SPA SAFETY ACT*

2. APPLY CONCRETE BONDING AGENT PER MANUFACTURER'S RECOMMENDATIONS PRIOR TO PLACING NEW CONCRETE.

6 NEW MAIN DRAIN

SCALE: 1/2" = 1'-0"

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GENERAL DETAILS

Sheet Number:

SP3.0