ADDENDUM NUMBER 4

for

ADVANCED TREATMENT PROJECT
FORT THOMAS TREATMENT PLANT
NORTHERN KENTUCKY WATER DISTRICT

FROM: CH2M HILL

TO: Plan Holders of Record

The following changes, additions, and deletions are hereby made a part of the project Bidding Documents as fully and completely, as if the same were set forth therein. Acknowledge receipt and acceptance of this Addendum in the space provided on the BID FORM .

SPECIFICATIONS

Item No. AD4-1: Bid Form (Section 00 41 13)

Bid Form has been reissued as part of this Addendum. Bidders shall use this Bid Form to submit their Bid. As a clarification, the modifications to the Bid Form made in Addendum 3 have been incorporated into the form attached to this addendum.

Item No. AD4-2: Supplements to the Bid Form (Section 00 41 13.1)

The supplements to the Bid Form have been reissued as part of this Addendum. Bidders shall use these supplements to submit their Bid. As a clarification, the modifications to the supplements made in Addendum 3 have been incorporated into the form attached to this addendum.

Item No. AD4-3: Supplementary Conditions (Section 00 73 00)

Add new Article SC-2.07.A. below:

> SC-2.07.A. Amend Paragraph 2.07.A. by adding the words "Construction Contract Administrator" in the first line after the word "Engineer".

Item No. AD4-4: CONCRETE JOINTS AND ACCESSORIES (Section 03 15 00)

Insert the specification section attached to this addendum

Item No. AD4-5: Cast-in-Place Concrete (Section 03 30 00)

Revise Article 2.04 CONCRETE MIX DESIGN as follows:

Paragraph 2.04.A.1.a secondary elements such as curbs, sidewalks, and pipe/conduit encasements shall be 4,000 psi instead of 3,000 psi at 28 days.

Item No. AD4-6: Steel Decking (Section 05 31 00)

Insert the specification section attached to this addendum.

Item No. AD4-7: Pre-Engineered, Light Gauge Steel Roof Framing and Deck (Section 05 41 00)

Insert the specification section attached to this addendum.

Item No. AD4-8: Metal Fabrications (Section 05 50 00)

Revise Article 2 GENERAL as follows:

Paragraph 2.01.B. shall meet ASTM A992/A992M and angles, channels, S-shapes and plates and bars shall meet ASTM A36.

Item No. AD4-9: Miscellaneous Specialties (Section 10 80 00)

Insert the following text to the end of the section

B. Vinyl Link Mat:

1. Material composition: highly resilient, top quality vinyl compound, 1/2 inch wide by 2 inches long by 7/16 inch thick with a minimum five wiping blades on each side of the link; apertures between links not to exceed 1/8 inch by 1/2 inch; 13-gauge double galvanized spring steel wire framework.
2. Color: As selected from manufacturer's standard colors.
3. Size: as shown on drawings.
4. Manufacturers and Products:
   a. American Floor Products Company, Inc Gaithersburg, MD; AL-109.
   b. R.C. Musson Co., Akron, OH; No CW-16.
   c. Pawling Corporation, Wassaic, NY; Parco-Link LM-100.

Item No. AD4-10: Switchboards (Section 26 14 13)

Revise Article 2.06 PROTECTIVE DEVICES as follows:

Revise paragraph 2.06 A.1 by replacing “Individually mounted draw-out,…” with “Fixed group mounted,…”

Delete paragraph 2.06 A.11.

Item No. AD4-11: Low-Voltage Adjustable Frequency Drive System (Section 26 29 23)

Revise Article 2.04 COMPONENTS as follows:

Delete paragraph 2.04 A.13.

Add the following paragraph to Article 2.04 H:

5. Drive Output Contactor: A drive output contactor shall be provided between the drive output and the motor. The contactor shall close on power up and open after a drive fault or loss of power.

Item No. AD4-12: Diesel Engine Generator Set (Section 26 32 13.13)

Revise Article 2.11 OUTDOOR WEATHER-PROTECTIVE ENCLOSURE as follows:

Add the following paragraph to article A.:

18. Enclosure to be walk-in type enclosure. Provide one personnel door with stainless steel handle and padlock provisions with plated three point locking mechanism. Safety feature shall allow opening from inside even when locked.

Item No. AD4-13: Facility Lightning Protection (Section 26 41 00)

Revise Article 1.02 DESIGN REQUIREMENTS as follows:

Delete paragraph A. and replace with the following:

A. Provide lightning protection system for the new AT Building and the covered walkway between the AT Building and the Lab.

Revise Article 3.01 GENERAL as follows:

Add the following paragraph:

E. Contractor to coordinate any roof mounted air terminals with the roof supplier to ensure water tightness and not void the warranty of the roof.

Item No. AD4-14: Process Piping - General (Section 40 27 00)

Add the following text to 1.01.A.5.:

"p. C210, Liquid-Epoxy Coating Systems for the Interior and Exterior of Steel Water Pipelines.
q. C218, Coating the Exterior of Aboveground Steel Water Pipelines and Fittings."

Delete item 1.03.B.5.a. and replace with the following:

"a. 40.5-inches WC of head loss when supplied with concurrent air and water flows of up to 2.0 scfm per square foot of air flow and up to 5 gpm per square foot of water flow at 75 degrees F in backwash mode."

Item No. AD4-15: Process Piping – General - Carbon Steel Pipe and Fittings – General Service (Section 40 27 00.03)

Add the following row:

Item	Size	Description
Linings	All	Liquid Epoxy: AWWA C210 minimum two coats. Applied by pipe manufacturer.

PLANS

Item No. AD4-16: MULTIPLE SHEETS

Change references in detail names from MP to FT where found on drawings.

Item No. AD4-17: AT Building Details (Sheet FT-G-008)

In the notes for STEEL DECK change note 6 by deleting "PER 2'-0" PANEL WIDTH" and replace with "PER 3'-0" PANEL WIDTH".

Item No. AD4-18: Special Inspections Plan (Sheet FT-G-011)

Delete Table 6 in its entirety.

Item No. AD4-19: AT Building Electrical Legend 3 (Sheet FT-G-017)

Add the following circuit callout tags:

[J4] = [2" Conduit, 4-#1/0, 1-#6 Ground]
[N4] = [3" Conduit, 4-#250, 1-#2 Ground]

Item No. AD4-20: SECTION D (Sheet FT-S-306)

Change the callout for Section 8 on FT-S-505 to Section 5 on FT-S-504 at drawing location B3.

Item No. AD4-21: SECTION E (Sheet FT-S-307)

Change reference drawing numbers from FT-S-121, 131, 141, 151, 301 to FT-S-122, 132, 142, 152.

Item No. AD4-22: DETAIL B (Sheet FT-S-501)

Add "SD" to Hilti RE500 adhesive.

Item No. AD4-23: AT Building Details (Sheet FT-S-502)

In Section 3: Change monorail beam size from "S18x54.7" to "S10x25.4".

Item No. AD4-24: AT Building Tank South Plan (FT-D-121)

Change dimension at top of page from 544'-0" to 8'-6".
Change dimension at top of page from 832'-0" to 13'-0".

AD4-25: AT Building Basement South Plan (FT-D-131)

As a clarification, the 36" opening shall be a 36" diameter manhole.

Item No. AD4-26: AT Building Section (FT-D-301)

As a clarification, the 36" opening shall be a 36" wall pipe flanged by plain end and shall have a 36" blind flange mounted to the flanged end.

Item No. AD4-27: AT Building Section (FT-D-302)

As a clarification, the 36" opening shall be a 36" wall pipe flanged by plain end and shall have a 36" blind flange mounted to the flanged end.

Item No. AD4-28: AT Building Details (FT-D-505)

Replace this sheet with the attached FT-D-505.

Item No. AD4-29: AT Building One-Line Diagram (Sheet FT-E-002)

In the main distribution panel MDP-AT, replace the 60 amp breaker feeding panel PPM transformer with an 80 amp breaker.

The transformer feeding MDP-AT should be 2000 kVA instead of 2500 kVA.

Item No. AD4-30: AT Building Basement Level North Power Plan (Sheet FT-EP-132)

The feeder from the UV unit to each UV panel designated as "Note 16, [X4]" should be replaced with "Note 16, [X2]".

Item No. AD4-31: AT Building First Floor South Power Plan (Sheet FT-EP-141)

The main fire alarm control panel is to be mounted in the Vestibule. The power feed for the panel shall be from panel PPB, circuit #14, conduit [B2]. Provide conduit [A2] from the control panel to LCP-AT for alarm.

Item No. AD4-32: AT Building First Floor North Lighting Plan (Sheet FT-EL-142)

In the electrical room, delete the occupancy sensor and replace with two three-way switches. Mount the switches inside the room adjacent to each doorway.

Item No. AD4-33: AT Building Electrical Room 108 Power Plan (Sheet FT-EP-402)

Add the following general note:

2. The equipment layout shown is based on information available at the time of design. The actual size of equipment and layout may vary depending on a particular manufacturer. Contractor to submit shop drawings and get the Engineer's approval of any proposed layout modifications before performing conduit rough-ins.

Replace MDP-AT-11 circuit callout [M4] with [N4].

Item No. AD4-34: AT Building Control Schematics (Sheet FT-E-601)

Revise the Blower FT-GAC-B-1 control schematic as follows:

At the bottom of the schematic, add a remote high pressure switch (PSH-5105) in series with a reset button and timing relay (TR1). In parallel with the high pressure switch contacts, add a NOTC set of TR1 contacts. Add another set of NOTC set of TR1 contacts in series with a control relay (CR5) and push-to-test pilot light. Wiring is to be similar to high pressure switch wiring shown on Drawing FT-E-602 for the GAC pumps.

At the bottom of the schematic add a remote high temperature discharge switch (TSH-5104) in series with a reset button and timing relay (TR2). In parallel with the high discharge temperature switch contacts, add a NOTC set of TR2 contacts. Add another set of NOTC set of TR2 contacts in series with a control relay (CR6) and push-to-test pilot light. Wiring is to be similar to high pressure switch wiring shown on Drawing FT-E-602 for the GAC pumps.

Item No. AD4-35: AT Building Control Schematics (Sheet FT-E-602)

Revise the Backwash Pump control schematic as follows:

Add a remote Hand-Off-Remote (HOR) selector switch. Wiring is to be similar to the HOR shown on the GAC Pump control schematic.

The control relay CR9 shown in series with TR1 contacts should be labeled CR10.

Item No. AD4-36: AT Building Panelboard Schedules (Sheet FT-E-603)

In the main distribution panel MDP-AT schedule, circuit #17, replace the 60 amp breaker feeding panel PPM transformer with an 80 amp breaker.

In the main distribution panel MDP-AT schedule, circuit #11, replace wire/conduit "4-#4/0, 1-#2 GND in 2-1/2" Conduit" with "4-#250 KCM, 1-#2 GND in 3" Conduit".

Add a 20 amp, single-pole breaker, circuit #14 for the main fire alarm control panel.

Item No. AD4-37: AT Building GAC Pump Station P&ID (Sheet FT-I-003)

Add VAH-1201 for the operator interface shown at LCP-AT. This alarm is typical for all the GAC Feed Pumps and BW Pumps.

Item No. AD4-38: AT Building GAC Contactor No. 2 P&ID (Sheet FT-I-006)

The GBS valve labeled "FT-GBS-BFV-002" should be "FT-GBS-BFV-004".

Item No. AD4-39: AT Building LCP-AT Panel (Sheet FT-I-021)

In the Bill of Materials, delete item #51 and label as "Not Used". There isn't a flow transmitter mounted inside the panel.

NOTE TO BIDDER: Use typewriter or BLACK ink for completing this Bid Form.

BID FORM
(STIPULATED PRICE BASIS)

1. BID RECIPIENT

1.1. This Bid is submitted to:

Owner:	Northern Kentucky Water District
Address:	P.O. Box 18640, 2835 Crescent Springs Road, Erlanger, KY 41018
Project Identification:	Fort Thomas Treatment Plant Advanced Treatment
Contract No.:	184-447

1.2. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

2. BIDDER'S ACKNOWLEDGEMENTS

2.1. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

3. BIDDER'S REPRESENTATIONS

3.1. In submitting this Bid, Bidder represents that:

3.1.1. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged.

Addendum No.	**Addendum Date**

_____ _____

_____ _____

(Bidder shall insert number of each Addendum received.)

3.1.2. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

3.1.3. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, and performance of the Work.

3.1.4. Bidder has carefully studied all: i) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in Paragraph 4.02 of the Supplementary Conditions; and ii) reports and drawings of Hazardous Environmental Conditions that have been identified in Paragraph 4.06 of the Supplementary Conditions.

3.1.5. Bidder has obtained and carefully studied (or accepts the consequences for not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.

3.1.6. Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) Bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.

3.1.7. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

3.1.8. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.

3.1.9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

3.1.10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

3.1.11. Bidder will submit written evidence of its authority to do business in the state where the Project is located not later than the date of its execution of the Agreement.

4. FURTHER REPRESENTATIONS

4.1. Bidder further represents that:

4.1.1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation;

4.1.2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

4.1.3. Bidder has not solicited or induced any individual or entity to refrain from bidding;

4.1.4. Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner; and

4.1.5. All required sales and use taxes are included in the stated Bid prices for the Work unless provision is made herein for the Bidder to separately itemize the estimated amount of sales tax.

5. BASIS OF BIDS

5.1. Bidder will complete the Work in accordance with the Contract Documents for the following price(s). Amounts will be shown in both words and figures. In case of discrepancy, the amount in words will govern.

5.2. CONTINGENCY ALLOWANCE

5.2.1. The contingency allowance that has been identified for inclusion with the Base Bid of the project is the following.

5.2.1.1. Unanticipated Changes in the Work: $100,000.

5.3. LUMP SUM BID PRICE

Item 1 – Ultraviolet (UV) Disinfection System **

For furnishing all labor, equipment and materials necessary for the installation of the medium pressure UV system to include the reactors, controls, sensors and other components identified in the Specifications or shown on the Drawings, the lump sum amount of:

_____ Dollars
(words)

and _____ Cents $_____
(numerals)]

** Note - This amount is the lowest of the capital cost amounts provided for different equipment vendors on the Guaranteed Present Worth Table which is included as a Supplement to this Bid Form.

Item 2 – Advanced Treatment Facility

For furnishing all materials, equipment and labor necessary to complete and put into operation a new Advanced Treatment Facility , including all work shown on the Drawings or as specified herein but not included in Item 1 of the Base Bid Schedule, the lump sum amount of:

_____ Dollars
(words)

and _____ Cents $_____
(numerals)]

BASE BID (TOTAL OF ABOVE) $_____

6. ALTERNATE BID SCHEDULE

6.1. The following is included for the Bidder to provide a lump sum amount for the addition or deletion of certain work, if so desired by the Owner. All Bidders are required to complete this portion of the Bid Form. Failure to complete this portion shall cause the Owner to declare the Bid non-responsive and give it no further consideration.

6.2. Bidder shall identify whether the price for each alternate bid item is an addition or deduction from the Total Base Bid Amount.

7. ALTERNATE NO. 1 DEDUCT AIR SCOUR SYSTEM

Delete all materials, equipment and labor associated with the installation of the air scour system consisting of the Rotary Positive Displacement Blower specified in Section 44 42 19.04 and ancillary electrical, controls and mechanical systems. Electrical and controls deletions associated with the blower include: the electrical disconnect switch at the blower, the Hand Off Remote selector switch at the blower, and all power and control wiring from the blower to the starter in the MCC. The conduits with a pull-wire are to remain. Stub-up conduits at the blower location and cap off for future use. Delete the blower RVSS in the MCC. The MCC section is to remain. Label the empty section as “Space”. Delete the control cable from the MCC starter to LCP-AT. The conduit with pull wire are to remain. Piping and fittings deletions associated with the air scour system include all air piping, fittings and instruments in the system connected to the blower and running through the building to the connection with the underdrain system as the location as shown on Drawings FT-D-131 and FT-D-132. Wall and floor penetrations are to remain and be filled with intumescent fire-resistant material consistent with the rating of the wall or floor. Air piping at the connection to the underdrain system are to be capped with a blind flange. Delete blower intake piping from the blower to the connection to the louver at the wall and fill the opening with intumescent fire-resistant material consistent with the rating of the wall

_____ Dollars
(words)

and _____ Cents $_____
(numerals)]

7.1. ALTERNATE NO. 2 DEDUCT Electric Traction Elevator

Delete all materials, equipment and labor associated with the installation of the electric traction elevator system as specified in Section 14 21 23. Electrical and controls deletions associated with the elevator include: the electrical disconnect switch at the drive motor, and all power and control wiring from the machine room to the starter in the MCC. The conduits with a pull-wire are to remain. Stub-up conduits at the machine room and cap off for future use. Delete the elevator RVSS in the MCC. The MCC section is to remain. Label the empty section as “Space”. Delete the control cable from the MCC starter to LCP-AT. The conduit with pull wire are to remain. Delete power and control wires to hall fixtures at each floor but conduit and pull wire are to remain. Cover hall fixture

opening with stainless steel plate. Fill openings to elevator shaft at each level with a 4-inch concrete masonry knock out wall and finish wall consistent with surrounding area. Cap any ventilation ducts at face of shaft.

_____ Dollars
(words)

and _____ Cents $_____
(numerals)]

7.2. ALTERNATE NO. 3 DEDUCT VEGETATED ROOF ASSEMBLY

Delete the vegetated roof assembly on the pitched roof portion of the Advanced Treatment Building as specified in SBS Modified Bituminous Membrane Roofing and Green Roof Surfacing, Section 07 52 00 and shown on Drawings FT-A-160, and FT-A-170 and FT-A-301. Substitute Metal Roofing Panels as specified in section 07-41-13 and shown on Drawings FT-A1-160 and FT-A1-301. Delete water supply piping for irrigation of Vegetated Roof Assembly but hose bibs and water supply to roof area are to remain.

_____ Dollars
(words)

and _____ Cents $_____
(numerals)]

7.3. ALTERNATE NO. 4 ADD or DEDUCT Stainless Steel Underdrain System in lieu of Plastic Underdrain System Delete all materials, equipment and labor associated with the installation of the plastic underdrains/ HDPE media support cap in the six contactors and replace it with all labor, material and equipment needed to install stainless steel underdrains in conformance with the specification section 44 43 34 and as shown on Drawings FT-D-131 and FT-D-132.

Add or Deduct (circle one) the following lump sum:

_____ Dollars
(words)

and _____ Cents $_____
(numerals)]

7.4. ALTERNATE NO. 5 ADD UV SYSTEM ALTERNATE MANUFACTURER

Delete all materials, equipment and labor associated with the installation of the UV system indicated in Item 1 of the LUMP SUM BID PRICE in Article 5.2 above and replace it with all labor, material and equipment needed to install the UV system provided by the alternate UV manufacturer in conformance with the specification section 44 44 73.

_____ Dollars
(words)

and _____ Cents $_____
(numerals)]

7.5. ALTERNATE NO. 6 DEDUCT UV SYSTEM

Delete all materials, equipment and labor associated with the installation of the medium pressure UV system as specified in section 44 44 73 including the reactors, controls, sensors and other components. Replace the three reactor trains with blind flanges on the two outside trains at the 48-inch headers on both ends and a single 48-inch pipe through the center train. Electrical and controls deletions associated with the UV system include: the cables from the UV module to the control panel, the power wiring from the UV control panel back to the MDP, the UV breaker in the MDP and label space as “Future”, and the UV UPS system complete. The conduits with a pull-wire are to remain. Stub-up conduits at the UV module and control panel. Cap off for future use. Delete any cooling water piping, fittings, controls and valves to UV reactor and any drain piping, fittings, controls and valves from the UV reactors to a location 6 inches above the floor. Cap connections of the cooling water and drain piping with blind flange.

_____ Dollars
(words)

and _____ Cents $_____
(numerals)]

8. TIME OF COMPLETION

8.1. Bidder agrees that the Work, and any Milestones specified in Section 01 31 13, Project Coordination, will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 14.07.B of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

8.2. Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work, and any specified Milestones, within the Contract Times.

9. ATTACHMENTS TO THIS BID

9.1. The following documents are attached to and made a condition of this Bid:

9.1.1. Required Bid security in the form of Bid bond.

9.1.2. Certification Regarding Debarment, Suspension and Other Responsibilities (EPA Form 5700-49)

9.1.3. Certification Regarding Lobbying, Certification for Contracts, Grants, Loans and Cooperative Agreements

9.1.4. Non-Collusion Affidavit

9.1.5. Bidder's Experience Record

9.1.6. Statement of Bidder's Qualifications

9.1.7. UV Procurement Evaluation

9.1.7.1. Guaranteed Present Worth Table – Option 1 Trojan Technologies

9.1.7.2. Guaranteed Present Worth Table – Option 2 Calgon Corporation

9.1.8. Proposed Subcontractors

9.1.9. Proposed Major Equipment Manufacturers

10. DEFINED TERMS

10.1. The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

11. BID SUBMITTAL

11.1. This Bid submitted by:

If Bidder is:

An Individual

Name *(typed or printed)*: _____

By *(signature)*: _____

Doing business as: _____

A Partnership

Partnership Name: _____(SEAL)

By: _____
(Signature of general partner – attach evidence of authority to sign)

Name *(typed or printed)*: _____

A Corporation

Corporation Name: _____(SEAL)

State of Incorporation: _____

Type (For profit, Professional, Service): _____

By: _____
(Signature of Vice President, Vice President, or other Officer – attach evidence of authority to sign)

Name *(typed or printed)*: _____

Title: _____(CORPORATE SEAL)

Attest: _____
(Signature of Corporate Secretary)

Original Date of Qualification to do business in Kentucky is: _____

A Joint Venture

Joint Venturer Name: _____(SEAL)

By: _____
(Signature of joint venture partner – attach evidence of authority to sign)

Name *(typed or printed)*: _____

Title:_____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Bidder's Business Address: _____

_____

Phone No.:_____ FAX No.:_____

BID SUBMITTED on _____, 20____

(State) Contractor's License No.:_____

Contractor's License Class (where applicable):_____

A Limited Liability Company

LLC Name: _____(SEAL)

State of Organization: _____

By: _____
(Signature of Member or Manager – attach evidence of authority to sign)

Name *(typed or printed)*: _____

Title:_____(CORPORATE SEAL)

Original Date of Qualification to do business in Kentucky is: _____

END OF SECTION

SECTION _00 41 13.1 – SUPPLEMENTS TO BID FORM

1. FORMS TO BE SUBMITTED WITH BID

   A. Certification Regarding Debarment, Suspension and Other Matters – EPA Form 5700-49 (Attachment No. 1)

   B. Certification Regarding Lobbying (Attachment No. 2)

   C. Non-Collusion Affidavit from Bidder (Attachment No. 3)

   D. Bidder's Qualifications (Attachment No. 4)

   E. Bidder's Experience Record (Attachment No. 5)

   F. UV Procurement Evaluation Guaranteed Present Worth Tables (Attachments 6A and 6B)

   G. Proposed List of Subcontractors (Attachment No. 7)

   H. Proposed Major Equipment Manufacturers (Attachment No. 8)

   I. Bid Security (Specification Section 00 43 13L)

2. FORMS TO BE SUBMITTED WITHIN 7 DAYS OF BID OPENING

   Certain information and documentation is required by the funding agencies and other governing bodies prior to awarding a necessary approval for this project. The BIDDER acknowledges, through the act of submitting a Bid, a commitment to submit the following documentation or information within 7 days of Bid Opening or within 5 days of the formal request to do so, whichever is greater. Failure to produce any of this documentation or information within the prescribed period will serve as grounds for rejection of the Bid. If the information is required from a subcontractor or vendor and is not produced within the prescribed, it will serve as grounds to replace the subcontractor or vendor with another company or product.

   Specific items to be submitted within 7 days of the Bid opening include:

   A. EPA Form 6100-2 DBE Participation (Attachment 12 – Section 00 74 00)
   B. EPA Form 6100-3 DBE Subcontractor Performance (Attachment 12 – Section 00 74 00)
   C. EPA Form 6100-4 DBE Subcontractor Utilization (Attachment 12 – Section 00 74 00)
   D. Disadvantage Enterprise Participation Policy (Attachment 12 – Section 00 74 00)
   E. List of DBE Bidders of Subcontracts (Attachment 12 – Section 00 74 00)
   F. Validation Report and Other Requested Information from Ultraviolet Disinfection (UV) Vendor

EPA Form 5700-49 **Attachment Number 1**

**CERTIFICATION REGARDING DEBARMENT,
SUSPENSION AND OTHER ESPONSIBILITIES**

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

(A) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency;

(B) Have not within a three-year period preceding this certification been convicted of or had a civil judgment rendered for commission of fraud of a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

(C) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1) (b) of this certification; and

(D) Have not within a three-year period preceding this certification had one or more public transactions (Federal, State or local) terminated for cause or default.

I understand that a false statement on this certification may be ground for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to $10,000 or imprisonment for up to 5 years, or both.

_____
Typed Name & Title of Authorized Representative

_____
Signature of Authorized Representative Date

_____ I am unable to certify to the above statements. My explanation is attached.

Attachment Number 2

CERTIFICATION REGARDING LOBBYING
Certification for Contracts, Grants,
Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriate funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriate funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, “Disclosure Form to Report Lobbying,” in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

_____
TYPED NAME & TITLE OF AUTHORIZED REPRESENTATIVE

_____
SIGNATURE OF AUTHORIZED REPRESENTATIVE DATE

_____ I am unable to certify to the above statements. My explanation is attached.

Attachment Number 3

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

STATE OF _____)

COUNTY OF _____)

_____, being first duly sworn, deposes and says that:

(1) He/She is _____
(OWNER, PARTNER, REPRESENTATIVE OR AGENT)

of _____, the Bidder that has submitted the attached bid;

(2) He/She is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

(3) Such Bid is genuine and is not a collusive or sham Bid;

(4) Neither the said Bidder nor any of its officers, partners, owners, agents or representatives, employees or parties in interest, including the affinity has in any way colluded, conspired, connived or agree, directly or indirectly with any other bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit or cost element of the Bid price or the Bid price of any other bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the _Owner of the Project or any person interested in the proposed Contract; and

(5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees or parties, including this affiant.

SIGNED _____

TITLE _____

Subscribed and sworn to before me this _____ day of _____, of this year _____.

_____ _____
(NAME) (TITLE)

MY COMMISSION EXPIRES: _____.

Attachment Number 4

STATEMENT OF BIDDER'S QUALIFICATIONS

All questions shall be answered or the bid document will be incomplete. All data given shall be clear and comprehensive. This statement shall be notarized. If necessary, questions may be answered on separate sheets. The bidder may submit any additional information it desires. If bidder is a joint venture, submit previous joint venture projects. If joint venture has not completed prior projects of this magnitude then submit projects completed by joint venture partners.

1. Name of Bidder:

2. Permanent main office address:

3. When organized:

4. If a corporation, where incorporated:

5. How many years have you been engaged in operation of your business under your present firm or trade name?

6. Contracts on hand. (Schedule these, showing amount of each contract and the appropriate anticipated dates of completion.)

7. General character of work performed by your company (general contractor, electrical contractor, etc.).

8. Have you ever failed to complete any job awarded to you? If so, where and why?

9. Have you ever defaulted on a contract? If so, where and why?

10. List the more important projects completed by your firm, stating the approximate cost for each, and the month and year completed on attached sheet.

11. List your major equipment available for this work.

12. Experience in work similar in complexity, size and/or dollar value to this project. List and describe at least four on the table "Project References."

13. Background and experience of the principal members of your organization, including the officers in this type work. (Attach.)

14. Credit available: $ _____.

15. Give bank reference: _____.

16. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the Owner? ❑ Yes ❑ No

17. The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information required by the Owner in verification of the statements made comprising this Statement of Bidder's Qualifications.

Dated at _____ this _____ day of _____, of this year _____.

_____
NAME OF BIDDER

BY _____

TITLE _____

STATE OF _____)
) ss.
COUNTY OF _____)

_____ being duly sworn deposes and says that he is

_____ of _____
(NAME OF ORGANIZATION)

and that the answers to the foregoing questions and all statements contained therein

are true and correct.

Subscribed and sworn to before me this _____ day of _____, of this year_____.

_____
(NOTARY PUBLIC)

My Commission expires _____, _____.

Attachment Number 5

BIDDERS EXPERIENCE RECORD
(PROJECTS NEED TO BE OF SIMILIAR SIZE AND NATURE)

Project Name, Owner, Address, Telephone #	Architect/Engineer, Contact Name, Telephone #	Project Type, Year of Completion	Size of Project (Capacity, Contract Duration)	Contract Value	Change Order Value

Attachment Number 6

UV PROCUREMENT BID EVALUATION

ARTICLE 1 – CALCULATION OF LIFE CYCLE COST

1.01 In the preparation and submission of a Bid, the Bidder and its proposed UV System Supplier will provide information required by the Owner in the Bid and Bid Evaluation Forms. This information will be used by the Bidder to calculate Life Cycle Cost using the Present Worth method of analysis. This form shall be completed by each Bidder and its proposed UV System Supplier and shall be submitted with the Bid.

1.02 The Bidder and its proposed UV System Supplier acknowledges that the calculation of Life Cycle Cost shall only include those items as identified in this Section. The Owner will not consider or include any item not listed herein. The Owner will not consider any other method of calculation other than what has been provided.

1.03 The Bidder and its proposed UV System Supplier acknowledges that the Owner shall be the sole judge of the values used to calculate the Present Worth. The Bidder and its proposed UV System Supplier acknowledges that the design and operational parameters of the Proposed UV System shall be evaluated by the Owner to justify the proposed cost criteria. Inaccurate or unjustifiable data shall be subject to disqualification which shall render the Bidder unresponsive.

1.04 The Bidder and its proposed UV System Supplier acknowledges review and acceptance of the performance warranty, component life warranty, price guarantee, and liquidated damage requirements of Sections including the Agreement and UV System.

1.05 The Bidder and its proposed UV System Supplier shall submit life cycle cost information for each UV system proposed. Bidder recognizes that Owner reserves the right to award the UV system based on either the lowest capital cost or the lowest lifecycle cost or based on other financial and non-financial considerations as the Owner determines to be in the best interest of the project.

ARTICLE 2 -- CALCULATION OF COSTS

2.01 Basis of Calculation

A. Cost Factors

1.	Present Worth Factor (PWF)	13.41 (25 yrs @ 5.5%)
2.	Cost of Energy (EC)	$0.08/kW-hr
3.	Hours per Year	8,766
4.	BHP / kW Conversion	0.7457

B. Ultraviolet Disinfection System

1. UV System equipment design parameters shall be as specified in Section 44 44 73. For the purposes of calculating life-cycle costs, the following information shall be considered:
    a. Average Daily Flow (ADF) is 23.5 MGD
    b. Average UV Transmittance is 95%
    c. Reduction Equivalent Dose is 8.5 mJ/CM^2

Attachment Number 6A

GUARANTEED PRESENT WORTH TABLE - OPTION 1 TROJAN TECHNOLOGIES

LINE	ITEM	UNITS	AMOUNT
	LUMP SUM BID PRICE FOR TROJAN EQUIPMENT		
A	For furnishing all materials, equipment and labor needed to install the complete UV disinfection system as shown on the Drawings or specified herein– Lump Sum Amount of:	$	
B	UV Reactor Model		
C	UV Reactor Flange Diameter (inches)		
D	Number of lamps installed per UV reactor		
E	Number of duty reactors (excluding standby reactor)		
	SYSTEM OPERATING PERFORMANCE INFORMATION AT ADF		
1	Number of Reactors operating at ADF	EA	
2	Total number of Lamps in service at ADF	EA	
3	Total number of Ballasts in service at ADF Size = _____kW	EA	
4	Total number of Sensors in service at ADF	EA	
5	Warranted Lamp Life (Not to Exceed 12,000 Hours)	Hours	
6	Warranted Ballast Life (Not to Exceed 10 Years)	Years	
7	Warranted Sensor Life (Not to Exceed 10 Years)	Years	
8	Warranted Lamp Sleeve Life	Years	
9	Guaranteed Lamp Replacement Cost	$	
10	Guaranteed Ballast Replacement Cost	$	
11	Guaranteed UV Sensor Replacement Cost	$	
12	Guaranteed Lamp Sleeve Replacement Cost	$	
13	Guaranteed Maximum Total UV System Power Consumption at ADF	kW	
	LIFECYCLE COST EVALUATIONS		
14	Annual Power Consumption (Line 13 x 8,766 hrs/yr)	kW-h/yr	
15	Annual Power Cost (Line 14 x $.08/kw-H)	$/yr	
16	POWER -PRESENT WORTH VALUE (LINE 15 X 13.41)	$	
17	Lamps Replaced Annually [(8,766/Line 5) x Line 2]	Lamps/Yr	

18	Annual Lamp Replacement Cost (Line 17 x Line 9)	$	
19	LAMP REPLACEMENT PRESENT WORTH (Ln 18 x 13.41)	$	
20	Ballasts Replaced Annually(Line 3 /Line 6)	Blst/yr	
21	Annual Ballast Replacement Cost (Line 20 x Line 10)	$	
22	BALLAST REPLACEMENT PRES WORTH (Ln 21 x 13.41)	$	
23	Sensors Replaced Annually (Line 4 /Line 7)	Snsr/yr	
24	Annual Sensor Replacement Cost (Line 23 x Line 11)	$	
25	SENSOR REPLACEMENT PRES WORTH (Ln 24 x 13.41)	$	
TOTAL LIFECYCLE COST			
26	Trojan Present Worth (Ln A+ Ln16+ Ln19+ Ln 22+ Ln25)	$	

CERTIFICATION INSTRUCTIONS

This Attachment shall be filled in by the Bidder using information supplied by the UV supplier and shall be submitted with the Bid. Certification signature on this attachment is not required at the time of the Bid.

Within 7 days following the Bid opening the apparent low bidder and any other bidders requested by the Owner shall submit to the Owner a duplicate copy of this Attachment as attached to the original Bid with a signature by an officer of the UV supplier to provide the certification below:

CERTIFICATION

"With the exception of Line A which includes Installing Contractor cost over which we have no control, we certify that all of the cost information, warranties and guarantees are true and valid.

_____ (signature)

_____ _____

(printed name and officer position) (date signed)

Attachment Number 6B

GUARANTEED PRESENT WORTH TABLE - OPTION 2 CALGON CORPORATION

LINE	ITEM	UNITS	AMOUNT
	LUMP SUM BID PRICE FOR CALGON EQUIPMENT		
A	For furnishing all materials, equipment and labor needed to install the complete UV disinfection system as shown on the Drawings or specified herein– Lump Sum Amount of:	$	
B	UV Reactor Model		
C	UV Reactor Flange Diameter (inches)		
D	Number of lamps installed per UV reactor		
E	Number of duty reactors (excluding standby reactor)		
	SYSTEM OPERATING PERFORMANCE INFORMATION AT ADF		
1	Number of Reactors operating at ADF	EA	
2	Total number of Lamps in service at ADF	EA	
3	Total number of Ballasts Size 1 in service at ADF Size = _____kW	EA	
4	Total number of Ballasts Size 2 in service at ADF Size = _____kW	EA	
5	Total number of Sensors in service at ADF	EA	
6	Warranted Lamp Life (Not to Exceed 12,000 Hours)	Hours	
7	Warranted Ballast Life (Not to Exceed 10 Years)	Years	
8	Warranted Sensor Life (Not to Exceed 10 Years)	Years	
9	Warranted Lamp Sleeve Life	Years	
10	Guaranteed Lamp Replacement Cost	$	
11	Guaranteed Ballast Size 1 Replacement Cost	$	
12	Guaranteed Ballast Size 2 Replacement Cost	$	
13	Guaranteed UV Sensor Replacement Cost	$	
14	Guaranteed Lamp Sleeve Replacement Cost	$	
15	Guaranteed Maximum Total UV System Power Consumption at ADF	kW	
	LIFECYCLE COST EVALUATIONS		
16	Annual Power Consumption (Line 15 x 8,766 hrs/yr)	kW-h/yr	

17	Annual Power Cost (Line 16 x $.08/kw-H)	$/yr	
18	POWER -PRESENT WORTH VALUE (LINE 17 X 13.41)	$	
19	Lamps Replaced Annually [(8,766/Line 6) x Line 2]	Lamps/Yr	
20	Annual Lamp Replacement Cost (Line 19 x Line 10)	$	
21	LAMP REPLACEMENT PRESENT WORTH (Ln 20 x 13.41)	$	
22	Ballasts Size 1 Replaced Annually(Line 3 /Line 7)	Blst1/yr	
23	Annual Ballast Size 1 Replacement Cost (Line 22 x Line 11)	$	
24	BALLAST Size 1 REPLACEMENT PRES WORTH (Ln 23 x 13.41)	$	
25	Ballasts Size 2 Replaced Annually(Line 4 /Line 7)	Blst2/yr	
26	Annual Ballast Size 2 Replacement Cost (Line 25 x Line 12)	$	
27	BALLAST Size 2 REPLACEMENT PRES WORTH (Ln 26 x 13.41)	$	
28	Sensors Replaced Annually (Line 5 /Line 8)	Snsr/yr	
29	Annual Sensor Replacement Cost (Line 28 x Line 13)	$	
30	SENSOR REPLACEMENT PRES WORTH (Ln 29 x 13.41)	$	
TOTAL LIFECYCLE COST			
31	Calgon Present Worth (Ln A+ Ln18+ Ln21+ Ln 24+ Ln27+Ln30)	$	

CERTIFICATION INSTRUCTIONS

This Attachment shall be filled in by the Bidder using information supplied by the UV supplier and shall be submitted with the Bid. Certification signature on this attachment is not required at the time of the Bid.

Within 7 days following the Bid opening the apparent low bidder and any other bidders requested by the Owner shall submit to the Owner a duplicate copy of this Attachment as attached to the original Bid with a signature by an officer of the UV supplier to provide the certification below:

CERTIFICATION

"With the exception of Line A which includes Installing Contractor cost over which we have no control, we certify that all of the cost information, warranties and guarantees are true and valid.

_____ (signature)

_____ _____

(printed name and officer position) (date signed)

ARTICLE 3 – NOTES ON TABLE ENTRIES

3.01 For determining Guaranteed Maximum Total UV System Power Consumption at ADF, include power use in the lamps, power transformers, ballasts and other miscellaneous power consuming components.

3.02 Owner will use the Guaranteed Maximum Total UV System Power Consumption at ADF for determination of Excess power consumption penalties as specified in Section 44 44 73 paragraph 3.06.

3.03 This analysis will be based on average daily flow. Assume lamps are at end-of-life.

3.04 End of Lamp life shall be defined as 80 percent of initial 100-hour output for the purposes of this analysis.

3.05 Guaranteed Replacement Price per lamp shall include disposal of used lamps.

END OF ATTACHMENT NO. 6

ATTACHMENT NO. 7

PROPOSED SUBCONTRACTORS

The BIDDER'S proposed subcontractors shall be listed below for the various branches of work included in the proposed contract. All subcontractors are subject to the approval of the OWNER. **Unless rejected by the OWNER, no substitutions or changes to the listing of the entities proposed to perform that branch of the work will be allowed following opening of the Bids.**

Where the BIDDER proposes to perform the work with its own forces, the phrase "Prime Contractor" shall be entered in the box provided.

Failure to submit a completed list shall be cause for rejection of the Bid.

Branch of Work	Name of Subcontractor
1. Excavation & Grading	
2. Concrete Work	
3. Masonry	
4. Electrical	
4. Panel Fabricator	
5. Instrumentation & Controls	
6. Mechanical	

ATTACHMENT NO. 8

PROPOSED MAJOR EQUIPMENT MANUFACTURERS

The BIDDER'S proposed major equipment manufacturers included in their Base Bid price shall be listed below for the requested items. **For the purposes of determining low Bidder, the Bidder shall include only manufacturers named in the specifications. Substitute or "or equal" manufacturer's will be considered after the Bid.** The OWNER reserves the right to reject any equipment manufacturers not listed in the Specifications. **Unless rejected by the OWNER, no substitutions or changes to this list of the major equipment manufacturers will be allowed after opening of the Bids.**

Failure to submit a completed list shall be cause for rejection of the Bid.

Major Equipment Item	Name of Manufacturer
1. Filter Underdrain System	
2. Vertical Turbine Pumps- GAC Feed Pumps GAC and Filter Backwash Pumps	
3. Rotary Postivie Displacement Blower	
4. Granular Activated Carbon Filter Media	
5. Diesel Engine Generator Set	

End of Section

SECTION 03 15 00
CONCRETE JOINTS AND ACCESSORIES

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. ASTM International (ASTM):
   a. A36/A36M, Specification for Carbon Structural Steel.
   b. A615/A615M, Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
   c. A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   d. A767/A767M, Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
   e. C920, Specification for Elastomeric Joint Sealants.
   f. D226, Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
   g. D227, Specification for Coal-Tar Saturated Organic Felt Used in Roofing and Waterproofing.
   h. D994, Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
   i. D1056, Specification for Flexible Cellular Materials—Sponge or Expanded Rubber.
   j. D1171, Standard Guide for Evaluating Nonwoven Fabrics.
   k. D1751, Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
   l. D1752, Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
2. Corps of Engineers (COE): CRD-C-572, Corps of Engineers Specifications for Polyvinylchloride Waterstop.
3. NSF International (NSF): 61, Drinking Water System Components - Health Effects.

1.02 SUBMITTALS

A. Action Submittals:

1. Shop Drawings:
   a. Waterstop: Details of splices, method of securing and supporting waterstop in forms to maintain proper orientation and location during concrete placement.
   b. Construction and Control Joints: Layout and location for each type.
2. Samples: PVC waterstop splice, joint, and fabricated cross of each size, shape, and fitting of waterstop.

B. Informational Submittals:

1. Joint Filler for Potable Water Structures: Copy of applicable NSF listing.
2. Manufacturer's written instructions for product shipment, storage, handling, installation/application, and repair for:
   a. Waterstop.
   b. Joint filler and primer.
   c. Preformed control joint.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements: Acceptance of pourable joint filler for potable water structures by federal EPA or by a state health agency.

1. Pourable Joint Filler: Certified as meeting NSF 61.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Acceptance at Site: Verify delivered materials are in accordance with Specifications and manufacturer's product data sheets prior to unloading and storing onsite.

B. Storage: Store materials under tarps to protect from oil, dirt, and sunlight.

PART 2 PRODUCTS

2.01 PLASTIC WATERSTOP

A. Extruded from elastomeric plastic compound of which basic resin shall be prime virgin polyvinyl chloride (PVC). Compound shall not contain scrapped material, reclaimed material, or pigment.

B. Specific Gravity: Approximately 1.37.

C. Shore Durometer Type A Hardness: Approximately 80.

D. Performance Requirements: COE Specification CRD-C-572.

E. Type: Center bulb with parallel ribs or protrusions on each side of strip center.

F. Corrugated or tapered type waterstops are not acceptable.

G. Thickness: Constant from bulb edge to outside stop edge.

H. Minimum Weight per Foot of Waterstop:

1. 1.60 pounds for 3/8 inch by 6 inches.
2. 2.30 pounds for 3/8 inch by 9 inches.

I. Factory Fabrications: Use only factory fabrications for intersections, transitions, and changes of direction.

J. Manufacturers and Products:

1. Vinylex Corp., Knoxville, TN; Catalog No. 03250/VIN: No. RB6-38H (6 inches by 3/8 inch) and No. RB9-38H (9 inches by 3/8 inch).
2. Greenstreak Plastic Products, St. Louis, MO; Catalog No. 03150/GRD: Style 732 (6 inches by 3/8 inch) and Style 735 (9 inches by 3/8 inch).
3. Four Seasons Industries Durajoint, Garrettsville, OH; Catalog No. CSP-162: Type 9 (6 inches by 3/8 inch), and Type 10 (9 inches by 3/8 inch).

2.02 HYDROPHILIC WATERSTOP

A. For use at construction joints only, where new concrete is placed against existing concrete and as shown on Drawings.

B. Material shall be a nonbentonite hydrophilic rubber compound.

C. Manufacturers and Products:

1. Greenstreak Plastic Products, St. Louis, MO; Hydrotite CJ-1020-2K with Leakmaster LV-1 adhesive and sealant.
2. Adeka Ultra Seal, JLM Associates, Spearfish, SD; MC-2010M with 3M-2141 adhesive and P-201 sealant.

2.03 BOND BREAKER

A. Tape for Joints: Adhesive-backed glazed butyl or polyethylene tape, same width as joint that will adhere to premolded joint material or concrete surface.

B. Use either bond breaker tape or bond prevention material as specified in Section 03 30 00, Cast-in-Place Concrete, except where tape is specifically called for.

2.04 PREMOLDED JOINT FILLER

A. Bituminous Type: ASTM D994 or ASTM D1751.

B. Sponge Rubber:

1. Neoprene, closed-cell, expanded; ASTM D1056, Type 2C5, with compression deflection, 25 percent deflection (limits), 119 kPa to 168 kPa (17 psi to 24 psi) minimum. Use in joints for potable and nonpotable water containment structures.
2. Manufacturer and Product: Rubatex Corp.; R-451-N.

2.05 PREFORMED CONTROL JOINT

A. One-Piece, Flexible, Polyvinyl Chloride Joint Former:

1. Manufacturer and Product: Vinylex Corp., Knoxville, TN; Kold-Seal Zip-Per Strip KSF-150-50-50.

B. One-Piece Steel Strip with Preformed Groove:

1. Manufacturer and Product: Burke Concrete Accessories, Inc., San Mateo, CA; Keyed Kold Retained Kap.

C. Furnish in full-length, unspliced pieces.

2.06 POURABLE JOINT FILLERS

A. Filler for Potable Water Containment Structures:

1. Meet requirements of NSF 61.
2. Multicomponent sealant, self-leveling or nonsag as required for level, sloping, or vertical joints.
3. Color: White.

4. Manufacturers and Products:
   a. Sika Chemical Co., Lyndhurst, NJ; Sikaflex-2C or Sikaflex-1A.
   b. Product Research Chemical Corp., Gloucester City, NJ; Permapol RC-270SL Reservoir Sealant or RC-270 Gun Grade Reservoir Sealant, with PRC Primer No. 57.

B. Filler for Nonpotable Water Containment Structures:

1. Pourable, two-component, cold-applied compound meeting ASTM C920, Type M, Grade P, Class 25, Use T.
2. Color: Black.
3. Manufacturer and Product: W.R. Meadows, Inc., Elgin, IL; Gardox.

2.07 STEEL EXPANSION JOINT DOWELS

A. Dowels: ASTM A36/A36M round smooth steel bars.

B. Bar Coating: As specified in Section 09 90 00, Painting and Coating, with factory-applied lubricating coating.

2.08 ACCESSORIES

A. Joint Sealants: As specified in Section 07 92 00, Joint Sealants.

B. Nonshrink Grout: As specified in Section 03 62 00, Nonshrink Grouting.

C. Roofing Felt: ASTM D226, Type II, 30-pound asphalt-saturated or equal weight of ASTM D227 coal-tar saturated felt.

D. Reinforcing Steel: As specified in Section 03 21 00, Reinforcing Steel.

E. Nails: Galvanized, as required for securing premolded joint filler.

F. Masking Tape: As required to temporarily adhere to concrete at each side of joint to receive filler.

G. Galvanized Rebar at Control Joints: ASTM A767/A767M and ASTM A615/A615M Grade 60 prior to galvanizing.

H. Ties for PVC Waterstop: “Hog Rings” or grommets for each edge at 12-inch maximum spacing.

PART 3 EXECUTION

3.01 GENERAL

A. Commence concrete placement after joint preparation is complete.

B. Time Between Concrete Pours: As specified in Section 03 30 00, Cast-in-Place Concrete.

3.02 SURFACE PREPARATION

A. Construction Joints: Prior to placement of abutting concrete, clean contact surface:

1. Remove laitance and spillage from reinforcing steel and dowels.
2. Roughen surface to minimum of 1/4-inch amplitude:
   a. Sandblast after concrete has fully cured.
   b. Water blast after concrete has partially cured.
   c. Green cut fresh concrete with high pressure water and hand tools.
3. Perform cleaning so as not to damage waterstop, if one is present.

B. Expansion Joint:

1. Use wire brush or other motorized device to mechanically roughen and thoroughly clean concrete surfaces on each side of joint from plastic waterstop to top of joint.
2. Use dry high pressure air to remove dust and foreign material, and dry joint.
3. Prime surfaces as required before placing joint filler.
4. Avoid damage to waterstop.

3.03 INSTALLATION OF WATERSTOPS

A. General:

1. Continuous waterstop (as specified) shall be installed in all construction joints in walls and slabs of water holding basins and channels and in walls of belowgrade structures, unless specifically noted otherwise.
2. Join waterstop at intersections to provide continuous seal.
3. Center waterstop on joint.
4. Secure waterstop in correct position. Tie waterstop to reinforcing steel using grommets, “Hog Rings,” or tiewire at maximum spacing of 12 inches. Do not displace waterstop during concrete placement.
5. Repair or replace damaged waterstop.

6. Place concrete and vibrate to obtain impervious concrete in vicinity of joints.
7. Joints in Footings and Slabs:
    a. Ensure that space beneath plastic waterstop is completely filled with concrete.
    b. During concrete placement, make visual inspection of waterstop area.
    c. Limit concrete placement to elevation of waterstop in first pass, vibrate concrete under waterstop, lift waterstop to confirm full consolidation without voids, then place remaining concrete to full height of slab.

B. Plastic Waterstop:

1. Install in accordance with manufacturer's written instructions.
2. Splice in accordance with waterstop manufacturer's written instructions using Teflon-coated thermostatically controlled heating iron at approximately 380 degrees F.
    a. Allow at least 10 minutes before new splice is pulled or strained in any way.
    b. Finished splices shall provide cross section that is dense and free of porosity with tensile strength of not less than 80 percent of unspliced materials.
    c. Use only factory made waterstop fabrications for all intersections, changes of directions and transitions.
    d. Field splice permitted only for straight butt welds.
3. Wire looped plastic waterstop may be substituted for plastic waterstop.

C. Hydrophilic Waterstop:

1. Install in accordance with manufacturer's written instructions.
2. Provide minimum of 2-1/2 inches of concrete cover over waterstop. When structure has two layers of reinforcing steel, locate centered between layers of steel or as shown.
3. Apply adhesive to concrete surface and allow to dry for specified time before applying waterstop strip.
4. Butt ends of waterstop strip together at splices and corners and join with sealant.
5. Verify that waterstop is anchored firmly in place before placing concrete. Do not allow vibrator to come into contact with waterstop.

3.04 EXPANSION JOINT INSTALLATION

A. Premolded Joint Filler:

1. Sufficient in width to completely fill joint space where shown.
2. If waterstop is in joint, cut premolded joint filler to butt tightly against waterstop and concrete face.
3. Precut premolded joint filler to required depth at locations where joint filler or sealant is to be applied.
4. Form cavities for joint filler with either precut, premolded joint filler, or smooth removable accurately shaped material. Entire joint above waterstop, in slabs, shall be formed and removed so that entire space down to waterstop can be filled with the pourable joint filler.
5. Vibrate concrete thoroughly along joint form to produce dense, smooth surface.

B. Bituminous Type Premolded Joint Filler:

1. Drive nails approximately 1 foot 6 inches on center through filler, prior to installing, to provide anchorage embedment into concrete during concrete placement.
2. Secure premolded joint filler in forms before concrete is placed.
3. Install in walkways, at changes in direction, at intersections, at each side of driveway entrances, and at 45-foot intervals, maximum.

C. Pourable Joint Filler:

1. General: Install in accordance with the manufacturer’s written instructions, except as specified below:
   a. Apply primer prior to pouring joint filler.
   b. Fill entire joint above the waterstop with joint filler as shown.
   c. Use masking tape on top of slabs at sides of joints; clean spillage. Remove masking tape afterwards.

D. Steel Expansion Joint Dowels:

1. Install coated and lubricated bars parallel to wall or slab surface and in true horizontal position perpendicular to joint in both plan and section view, so as to permit joint to expand or contract without bending dowels.
2. Secure dowels tightly in forms with rigid ties.
3. Install reinforcing steel in concrete as shown.

END OF SECTION

SECTION 05 31 00
STEEL DECKING

PART 1 GENERAL

1.01 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Iron and Steel Institute (AISI): Specifications for the Design of Cold Formed Steel Structural Members.
2. American Welding Society (AWS): D1.3, Structural Welding Code - Sheet Steel.
3. ASTM International (ASTM):
   a. A611, Standard Specification for Structural Steel (SS), Sheet, Carbon, Cold-Rolled.
   b. A653, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   c. A780, Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
   d. A924, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
4. Steel Deck Institute (SDI):
   a. Design Manual for Composite Decks, Form Decks and Roof Decks.
   b. Diaphragm Design Manual.
5. Factory Mutual (FM):
   a. Factory Mutual Approval Guide.
   b. FM Research Corporation (FMRC): Approval Requirements for Steel Roof Deck Construction.
6. International Code Council Evaluation Service, Inc. (ICC-ES): Evaluation Reports for Deck Fasteners.
7. Underwriters Laboratories, Inc. (UL): Fire Resistance Directory.

1.02 SUBMITTALS

A. Action Submittals:

1. Plan view layout of decking showing type and section properties of deck panels, reinforcing channels, pans, special jointing, and accessories.
2. Location of openings, deck laps, and deck attachment details.

B. Informational Submittals:

1. Decking manufacturer's installation requirements.
2. Welding Procedures, Qualifications, and Inspection Report: As specified in Section 05 05 23, Welding.
3. Operation manuals for mechanical fastener installation tools.
4. Manufacturer's Certificate of Compliance, in accordance with Section 01 33 00, Submittal Procedures.

1.03 QUALITY ASSURANCE

A. General: For metal decking section properties, meet requirements of AISI Specifications for Design of Cold-Formed Steel Structural Members.

B. FM Requirements:

1. Steel Roof Deck: Listed in Factory Mutual "Approval Guide" for Class 1 fire rating and Class 1-90 wind uplift rating.
2. Mechanical Fasteners: Packing containers shall show name of manufacturer and product and FMRC approval mark.

C. Qualifications for Field Welding: As specified in Section 05 05 23, Welding.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Store deck bundles on platforms or pallets, with one end elevated to provide drainage.

C. Protect bundles against condensation with a ventilated waterproof covering.

D. Stack bundles so there is no danger of tipping, sliding, rolling, shifting or material damage.

PART 2 PRODUCTS

2.01 METAL DECKING

A. Provide metal deck as shown in the following schedule:

STEEL DECK SCHEDULE								
Type	**Depth (in)**	**Panel Width (in)**	**Design Thickness (in)**	**Min. Yield Strength Fy (ksi)**	**Min. (+) S (in^3/ft)**	**Min. I (in^4/ft)**	**Minimum Diaphragm Shear Capacity (lbs/ft)**	**Finish**
Roof Deck	1-1/2	36	0.0295	33	0.19	0.17	200	Galv, G-60

B. Materials and Finishes:

1. Galvanized Deck:
   a. Sheet steel for galvanized deck and accessories shall conform to ASTM A653 Structural Quality Grade 33 or higher, as shown in Steel Deck Schedule.
   b. Galvanizing shall conform to ASTM A924 with coating class of G60 or G90 as defined in ASTM A653 and as shown in Steel Deck Schedule.

C. Manufacturers:

1. Vulcraft Division of Nucor Co., Brigham City, UT.
2. BHP Steel Building Products, USA, Inc., West Sacramento, CA.
3. Verco Manufacturing, Inc., Phoenix, AZ.
4. United Steel Deck, Inc., Summit, NJ.

2.02 ACCESSORIES

A. Provide pour stops, column closures, end closures, cover plates, girder fillers, ridge and valley plates, finish strips, reinforcing channels, and other accessories as required for complete installation.

B. Accessories shall be minimum 22-gauge, except edge forms shall be sized as required by the deck manufacturer, unless shown otherwise on the Drawings.

2.03 MECHANICAL FASTENERS

A. Self-Drilling Screws:

1. Self-drilling, self-tapping screws with hexagonal washer head and corrosion-resistant finish.
2. Manufacturers and Products:
   a. ITW Buildex, Itasca, IL; ICH Traxx Self-Drilling Fasteners with Climaseal Coating and Autotraxx Standup Installation Tool.
   b. Hilti, Inc., Tulsa, OK; Kwik-Pro HWH Self-Drilling Screws with Kwik-Cote Treatment and Kwik-Tapper Screwdriver.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine supporting framing and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance of steel deck.

3.02 INSTALLATION

A. Locate deck bundles to prevent overloading of support framing members.

B. Install at right angles to supporting members in a three span minimum lay-up, unless shown otherwise, and in accordance with Specification and manufacturer’s installation recommendation.

C. Bearing: 1-1/2 inches, minimum.

D. Endlaps: Minimum of 2 inches and located over supports.

E. Do not stretch sidelaps.

F. Closure Plates:

1. Install closure and cover plate accessories as recommended by the metal deck manufacturer, unless shown otherwise on the Drawings.

G. Holes and Openings

1. Cut and fit around roof openings and other work projecting through or adjacent to decking.
2. Locate holes and openings as shown to clear structural framing and bracing members.

3. Reinforcement around openings:
   a. Roof Deck: For hole sizes of at least 6 inches across, but not more than 12 inches across in roof deck, reinforce with 0.0474-inch design thickness steel plate, painted or galvanized to match deck coating. Extend plate at least 12 inches beyond opening in all directions and attach to top of roof deck with No. 10 self-drilling screws at 6-inch spacing and at all corners. For openings larger than 12 inches across, reinforce roof deck with framing as shown on Drawings.

H. Protect deck areas from heavy concentrated loads or wheel traffic with planking or other approved means.

I. Install temporary shoring, if required, to meet strength and deflection limitations, before placing any concrete topping on deck panels.

J. Completed Deck: Free from buckles and irregularities, and in accordance with FM and UL requirements.

3.03 DECK ATTACHMENT

A. Fasten panels as shown in the following schedule:

STEEL DECK ATTACHMENT SCHEDULE

		At Perpendicular Supports		At Parallel Supports		At Sidelaps	
Type	**Depth (in.)**	**Type**	**No. Per Sheet**	**Type**	**Spacing (in.)**	**Type**	**Spacing**
Roof Deck	1-1/2	5/8” dia. spot welds	**4**	5/8” dia. spot welds	18”	#10 TEK Screw	30” max.

B. Welded Connections: Weld deck sidelaps, attachment to framing, and accessories in accordance with AWS D1.3 and as specified in Section 05 05 23, Welding.

C. Mechanical Fasteners:

1. Self-Drilling Screws:
   a. Install screws in accordance with manufacturer’s written instructions and with special installation tool. Do not over-torque.
   b. Remove and redrive screws at sidelaps where upper sheet is not drawn tightly against lower sheet.

2. Powder Driven Fasteners:
   a. Install fasteners in accordance with manufacturer's written instructions and with special installation tool.
   b. Minimum Sidelap Edge Distance: 3/8 inch.
   c. Minimum End/End Lap Distance: 1 inch.
   d. Head Projection: As specified by manufacturer for correct penetration into flange of steel support member.

3.04 TOUCHUP PAINTING

A. Immediately following erection, remove unused deck edge trimmings, screws, fasteners, welding washers, butt ends of welding rods, and debris from completed installation.

B. Clean field welds, bolted connections, rust spots, and abraded areas.

C. Repair damaged painted surfaces as specified in Section 09 90 00, Painting and Coating.

D. Repair damaged galvanized surfaces with zinc-rich spray paint in accordance with ASTM A780; color to match galvanized deck.

E. Use magnetic gauge to determine that thickness of repair is equal to or greater than base painted or galvanized coating.

3.05 FIELD QUALITY CONTROL

A. An independent testing agency will be retained by Owner to perform following inspections.

1. Welded Connections: Visually inspect in accordance with AWS D1.3, Section 7, and as specified in Section 05 05 23, Welding.
2. Mechanical Fasteners: Visually inspect, in accordance with manufacturer's instructions, for each type of fastener.

B. Repair or replace defective welds and fasteners.

C. Special inspection will be provided by Owner where indicated on Drawings.

END OF SECTION

SECTION 05 41 00
PRE-ENGINEERED, LIGHT GAUGE STEEL ROOF FRAMING AND DECK

PART 1 GENERAL

1.01 SUMMARY

A. Section includes pre-engineered, prefabricated light gauge cold formed steel framing, deck and fascia closure plate for sloped metal roofs of the following structures:

1. Fort Thomas Advanced Treatment Facility.

1.02 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. American Iron and Steel Institute (AISI):
   a. Specification for the Design of Cold-Formed Steel Structural Members.
   b. Cold-Formed Steel Design Manual.
   c. Design Guide for Cold-Formed Steel Trusses.
   d. Fasteners for Residential Steel Framing.
2. American Welding Society, Inc. (AWS):
   a. C1.1, Recommended Practices for Resistance Welding.
   b. C1.3, Recommended Practices for Resistance Welding Coated Low Carbon Steels.
   c. D1.1, Structural Welding Code-Steel.
   d. D1.3, Structural Welding Code-Sheet Steel.
3. ASTM International (ASTM):
   a. A370, Standard Test Methods and Definitions for Mechanical Testing of Steel Products.
   b. A500, Standard Specification for Cold-Formed Welded and Seamless Carbon Structural Tubing in Rounds and Shapes.
   c. A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   d. A780, Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
   e. C954, Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 inch to 0.112 inch in Thickness.

f. C955, Standard Specification for Load-Bearing (Traverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases.

4. Center for Cold-Formed Steel Structures (CCFSS): Technical Bulletin, Vol. 2, No. 1, February 1993, Screw Connections.
5. International Conference of Building Officials (ICBO): Evaluation Reports for Cold-Formed Steel Framing and Fasteners.

1.03 PERFORMANCE REQUIREMENTS

A. Calculate structural characteristics of cold-formed steel framing members according to AISI's "Specification for the Design of Cold-Formed Steel Structural Members, 1986 (1990)."

B. Structural Performance: Design, fabricate, and erect cold-formed steel framing to withstand specified design loads within limits and under conditions required.

1. Design Loads:
   a. Dead: As determined from the member weights shown.
   b. Live: As shown on Design Documents.
   c. Wind: Designed to ASCE 7.
   d. Calculate diaphragm loads based on the structural geometry given in the drawings and design members accordingly.
2. Deflections: Live load deflection meeting the following (unless otherwise specified):
   a. Roof Framing: Vertical deflection less than or equal to 1/240 of the span.
3. Truss spacing shall not exceed 5'-0" center to center.
4. Design trusses to span from wall support to wall support, i.e. Do not provide trusses supports at mid span on cast-in-place or hollow core pre-stressed concrete roof.
5. At the truss support extend fasteners through hollow core pre-stressed concrete into poured in place concrete or masonry wall.

1.04 SUBMITTALS

A. Shop Drawings:

1. Provide shop drawings signed and sealed by registered Engineer Licensed in Kentucky.
2. Plan and elevation views of all metal framing systems, including location and framing of all openings.
3. Material specifications, member sizes, and properties.

4. Details of track, web stiffeners, stud bracing, blocking, bridging, and other members as required to provide a complete installation.
5. Details of connections including welding, mechanical fasteners, and accessory items.
6. Light Gauge Steel Framing: Complete design calculations for member stresses, deflections, and connections, stamped by a registered Engineer licensed in Kentucky. Include calculations for anchorage connections to resist wind uplift and lateral loads and for temporary handling and bracing requirements.
7. Installation and erection instructions, including sequence of operations and requirements for temporary bracing and bridging.

B. Information Submittals:

1. Manufacturer's installation requirements.
2. Welding Procedures, Qualifications, and Inspection Report: As specified in Section 05 05 23, Welding.
3. Operation manuals for mechanical fastener installation tools.

1.05 QUALITY ASSURANCE

A. General: For member section properties, meet requirements of AISI, Specification for the Design of Cold-Formed Steel Structural Members.

B. Qualifications for Welding: As specified in Section 05 05 23, Welding.

C. Fabricator Qualifications: Cold formed steel truss fabricator with 5 years experience in designing and fabricating cold formed steel framing.

D. Installer Qualifications: Installation shall be performed by an experienced installer approved by cold form steel framing system fabricator.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver to site in bundles marked with name of manufacturer, section type, thickness, grade of material, and length.

B. Store bundles on wood blocking, flat and off ground, to keep clean and to prevent any damage or permanent distortion.

PART 2 PRODUCTS

2.01 GENERAL

A. Provide size and type of members as required.

B. Sheet Steel: ASTM A653/A653M, with G-60 (Z75) galvanized coating.

C. Cold-Formed Members and Accessories: ASTM C955.

D. Metal Deck: 1 1/2” deep galvanized to Z275, minimum gauge 22, maximum span 5’-0”.

2.02 LIGHT-GAUGE STEEL ROOF FRAMING

A. General: Provide type, chord configuration, span, and depth of member as required to meet the layout indicated on Drawings.

B. Material:

1. Members:
   a. ASTM A653/A653M, Structural Steel (SS) Grade 33, High-Strength Low-Alloy Steel (HSLAS), Type A or B, Grade 50, or A500, Grade B, with G60 galvanized coating and minimum design thickness equal to 0.0346 inch.
   b. Section: Cold-formed rectangular tubing, or C-sections with return lips and unpunched webs.
2. Accessories: Provide manufacturer’s standard bracing, bridging, blocking, reinforcements, tie straps, holddowns, fasteners, and accessories as required for a complete light gauge steel framing system.

2.03 MECHANICAL FASTENERS

A. Self-Drilling Screws:

1. Self-drilling, self-tapping screws with hexagonal washer head and corrosion-resistant finish.
2. Manufacturers and Products:
   a. ITW Buildex, Itasca, IL; ICH Traxx Self-Drilling Fasteners with Climaseal Coating and Autotraxx Standup Installation Tool.
   b. Hilti, Inc., Tulsa, OK; Kwik-Pro HWH Self-Drilling Screws with Kwik-Cote Treatment and Kwik-Tapper Screwdriver.

B. Powder Driven Fasteners:

1. Knurled shank, minimum 1/2-inch diameter steel washer, corrosion-resistant coating.
2. Pin diameter and length to suit deck type and flange thickness of steel support member.

3. Manufacturers and Products:
   a. ITW; Buildex BX14 pins with yellow dichromate galvanizing and BX900 Installation Tool.
   b. Hilti Corporation; ENP-series fasteners with electroplated zinc coating and DX-750 Installation Tool.

2.04 CONCRETE ANCHORS

A. Drilled anchors, size and type as specified in Section 05 50 00, Metal Fabrications.

2.05 PREFABRICATION

A. Structural framing may be prefabricated prior to erection.

B. All light-gauge steel trusses shall be shop prefabricated.

C. Prefabricated assemblies shall be not more than 3 mm (1/8 inch) out of square within length of assembly and shall be braced against racking. Use jig templates for layout and fabrication.

D. Protect prefabricated members from damage during handling.

PART 3 EXECUTION

3.01 EXAMINATION

A. Inspect all prefabricated assemblies and repair any damage.

B. Examine bearing support surfaces for compliance with requirements for installation tolerances and other conditions affecting performance of metal framing systems.

C. Provide smooth level bearing surfaces for connection.

D. Clean all member and bearing surfaces that will be in contact after assembly.

3.02 INSTALLATION

A. General:

1. Install framing systems in accordance with manufacturer’s recommendations.
2. Provide temporary bracing for support of all construction loads until framing system is installed complete with decking.
3. Install framing in true line, plumb, level, and in proper alignment.

4. Cut ends of framing members with saw or shear to bear uniformly against abutting members. Flame cutting is not permitted.
5. All structural framing members shall be full-length without splices, unless indicated otherwise.
6. Fasten members together in accordance with AISI, Cold-Formed Steel Design Manual, Part IV, Connections. Wire typing is not permitted.

B. Light-Gauge Steel Trusses:

1. Follow truss fabricator's instructions for proper handling, installation, and bracing of prefabricated trusses.
2. Provide proper lifting equipment adequate for size of trusses. Use designated lift points to avoid bending truss in weak direction.
3. Attach to bearing track with holddown anchors.
4. Immediately install temporary bracing as required at top and bottom chords to keep trusses plumb and true to line.
5. Use temporary diagonal bracing to support top chords as required.
6. Install solid blocking at bearing tracks and ridge and attach permanent bridging.
7. Do not apply load to trusses until all bracing and bridging have been installed complete.
8. Do not remove, cut, or otherwise alter truss members or connections.
9. Tolerances:
    a. Truss Length: Plus or minus 1/2 inch up to 30 feet in length, plus or minus 3/4 inch over 30 feet.
    b. Truss Height: Plus or minus 1/4 inch up to 5 feet in height, plus or minus 1/2 inch over 5 feet.
    c. Truss Spacing: Plus or minus 1/8 inch.
    d. Truss Levelness: Plus or minus 1/8 inch in 10 feet.

C. Metal Deck and Fascia Closure Plate:

1. Install deck and closure plate as specified in Section 05 31 00, Steel Decking.

3.03 FASTENERS

A. Self-Drilling Screws:

1. Install in accordance with manufacturer's written instructions and with special installation tool.
2. Screw type, diameter, and length shall be in accordance with AISI, Fasteners for Residential Steel Framing, minimum two screws per connection unless indicated otherwise.

3. Use clamp to hold members together. Drive screw from lighter to heavier gauge, to allow plies to be pulled together without stripping metal. Do not over torque. A minimum of three exposed threads shall extend through steel.
4. Minimum screw spacing, end distance, and edge distance shall be 3 diameters.

B. Powder Driven Fasteners:

1. Use only for connecting cold-formed steel to structural steel members, unless indicated otherwise.
2. Install in accordance with manufacturer's written instructions and with special installation tool.

C. Welded Connections:

1. Welding shall not be used for material thinner than 0.0451 inch.
2. Weld framing members and accessories in accordance with AWS D1.3.
3. Resistance welding for prefabricated framing shall be in accordance with AWS C1.1 and C1.3.
4. Repair galvanized surfaces damaged by welding with zinc-rich spray paint in accordance with ASTM A780.

D. Concrete Anchors: Install in accordance with Section 05 50 00, Metal Fabrications.

3.04 FIELD QUALITY CONTROL

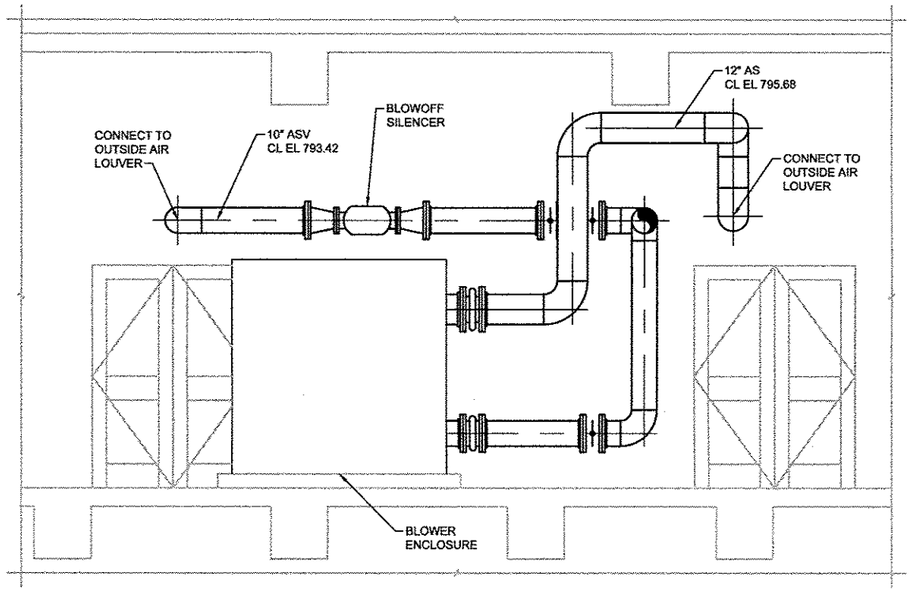
A. An independent testing agency will be retained to serve as the special inspector, by Owner to perform the following inspections:

1. Welded Connections: Visually inspect in accordance with AWS D1.3, Section 7, and as specified in Section 05 05 23, Welding.
2. Mechanical Fasteners: Visually inspect, in accordance with manufacturer's instructions, for each type of fastener.

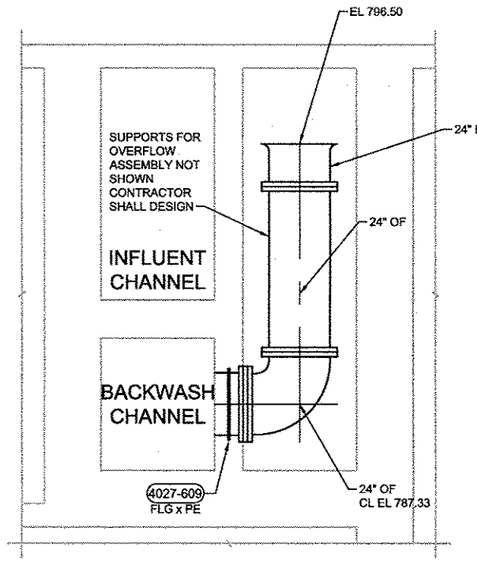
B. Repair or replace defective welds and fasteners.

C. Prepare and repair damaged galvanized coatings on fabricated and installed cold-form steel framing with galvanizing repair paint according to ASTM A780 and the manufacturer's instructions.

END OF SECTION



A SECTION
3/8" = 1'-0"
BLOWER



B SECTION
3/8" = 1'-0"
GAC CONTACTOR OVERFLOW

NO.	DATE	DR	CHK	APVD
DSGN	D. GREENFIELD	JM BRADLEY	D. RAMSEY	APVD

REVISION BY APVD

N. WINNIKE

NKYWD_Logo.jpg

ADVANCED TREATMENT
FORT THOMAS WTP
NORTHERN KENTUCKY WATER DISTRICT
FORT THOMAS, KENTUCKY

CH2MHILL HDR

PROCESS MECHANICAL
AT BUILDING DETAILS

AS SHOWN
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	CDD-DATE
PROJ	380723
DWG	FT-D-505
SHEET	131

PRELIMINARY

FILENAME: FT-D-505.dwg PLOT DATE: Jan 12, 2010 PLOT TIME: 3:25pm