

## SECTION 00 91 13

### ADDENDUM NO. 1

This Addendum modifies, amends, and supplements designated parts of the Bidding Documents and are hereby made a part thereof by reference. It shall be the responsibility of each Bidder to be familiar with the contents of this addendum and to notify, if necessary any Subcontractors and Suppliers they propose to use for various parts of the services of any changes or modifications contained in this Addendum. No claims for compensation, due to lack of knowledge of the contents hereof, will be considered. Bidders must acknowledge receipt of this Addendum in the Bid Form and comply with the requirements for submission of Bids as set forth in the Bidding Documents.

A pre bid conference was held on Wednesday October 15, 2014 at 10 AM local prevailing time at the Millham Water Treatment Plant, 225 Boundary Street, Marlborough, MA 01752. Attached is a list of attendees.

**The answers below are provided in response to questions and comments submitted by prospective Bidders.**

*Is there electrical work required for the new HVAC equipment in the Pump House?*

Answer: Yes. Refer to Drawings E-101 and E-602 reissued as an attachment to this Addendum (Addendum No. 1) for further clarification.

*The contract requires Pollution Liability insurance. We sub out all hazardous work, so if we were to come across this type of work the sub would carry the pollution insurance. Is pollution liability required, and if so, can the sub be the one that carries the insurance?*

Answer: Pollution Liability is to cover bodily injury, property damage, defense, and cleanup as a result of sudden, accidental and gradual pollution conditions arising from contracting operations performed by or on behalf of the Contractor. It is not for hazardous conditions encountered at the site. Often times General Liability coverage carries an element of pollution liability. Also referred to as "Contractors Environmental Liability". Several articles and definitions from IRMI (an on-line insurance and risk management resource) are attached for informational purposes only and Owner and Engineer make no representations or warranties as to the adequacy of the content therein for Bidders' purposes. Bidders must consult with their insurance advisors regarding the content.

*The contract requires Professional Liability, which is required for contracts with Engineering services. Since this is a construction contract, is this still required?*

Answer: Professional Liability: This coverage is required to cover design elements in the Work, such as a survey or specialty subcontractor design or items requiring a P.E. stamp. See modified language in the Section 00 73 10 replacement page, attached.

**NOTICE is hereby given that the Bidding Documents have been modified and replacement pages are issued herewith.**

**SPECIFICATIONS**

- Delete Section 31 25 00 Erosion Controls in its entirety
- Specification replacement pages identified in the following table are included as an attachment to this Addendum (Addendum No. 1), have an Issue Date of October 21, 2014 and contain reference to “ADDENDUM NO. 1” in the footers. Text changes are identified by double-underline for additions and ~~strikeout~~ for deletions.

<b>Replacement pages (with text changes)</b>	<b>Provided for purposes of double-sided printing only - no changes (front or back of replacement page)</b>
00 01 10-5	00 01 10-6
00 21 13-5, 00 21 13-6	
00 41 02-3	00 41 02-4
00 43 40-1, 00 43 40-2	
00 43 93.01-1	00 43 93.01-2
00 54 00-2	00 54 00-1
00 73 10-4	00 73 10-3
43 21 00-6	43 21 00-5

**DRAWINGS**

- Drawing replacement pages/sheets are identified in the following table and are included as an attachment to this Addendum (Addendum No. 1) and have a revision date of October 17, 2014 in the revision block with changes encircled by “clouds” and designated as “C”.

<b>Replacement pages/sheets</b>
E-101 Raw Water (Low Lift) Pump Building Electrical Plans
E-206 Main Floor Electrical Plan 1
E-301 UV Building Electrical Plans
E-501 Panel Schedules
E-602 Wiring Diagram

- Drawing modifications are identified in the following table and do **NOT** involve replacement pages/sheets. Text changes are identified by double-underline for additions and ~~strikeout~~ for deletions.

Sheet No.	Modifications
C-201	<ul style="list-style-type: none"> <li>- Revise Civil General Note 1 as follows; “1. SEE SHEET <del>G-01</del> <u>G-001</u> FOR LEGEND GENERAL NOTES”</li> <li>- Revise Civil General Note 3 as follows; “3. CLEAR AND GRUB AREA WITHIN <del>FENCE LINE</del> <u>LIMIT OF WORK</u>, INCLUDING ALL TREES, SHRUBS, AND FALLEN DEBRIS AS NECESSARY TO PERFORM WORK.”</li> <li>- Revise Civil General Note 11 as follows; “11. REMOVE AND REPLACE THE SIGN <u>LOCATED ON THE FENCE</u> IN FRONT OF THE TREATMENT PLANT.”</li> </ul>
M-202	<ul style="list-style-type: none"> <li>- Revise the callout for the 8” spool piece on the discharge side of High Lift Pump No. 2 in the Partial Plan and Section A as follows; “8” SPOOL PIECE (<del>ANSI CLASS 125 X 250 LB FLANGES</del>) WITH RESTRAINED FLANGE ADAPTOR AND TAP FOR CONTROL VALVE PRESSURE TRANSMITTER”</li> <li>- Revise Note 1 of the sheet notes as follows; “1. ALL PIPING, <u>FLANGES, COUPLINGS</u> EQUIPMENT, AND APPURTENANCES ON THE DISCHARGE SIDE OF THE HIGH LIFT PUMP SHALL BE <u>PRESSURE RATED FOR A MINIMUM WORKING PRESSURE OF 250 PSI PRESSURE.</u>”</li> <li>- Add Note 2 to the sheet notes as follows; “<u>2. DRILLING AND DIMENSIONS OF THE FLANGES FOR HIGH LIFT PUMP NO. 2 SHALL CONFORM TO THE ANSI/ASME B16.1 STANDARD, CLASS 250 RATING. PROVIDE ASSOCIATED PIPE, COUPLINGS, EQUIPMENT, AND APPURTENANCES ACCORDINGLY.</u>”</li> </ul>
M-206	<ul style="list-style-type: none"> <li>- Revise the callout for the level sensor in the fluoride overflow pit as follows; “LEVEL SENSOR TO BE INSTALLED IN FLUORIDE OVERFLOW PIT LOCATED OUTSIDE THE PLANT (SEE SHEET <del>C-200</del> <u>C-201</u>)”</li> </ul>
M-207	<ul style="list-style-type: none"> <li>- Revise label for analyzer in Laboratory as follows; “<del>TOTAL CHLORINE</del> <u>FLUORIDE</u> ANALYZER”</li> <li>- Revise callout for analyzer in Laboratory as follows; “<del>REMOVE ANC DISPOSE OF TOTAL CHLORINE ANALYZER</del> <u>FLUORIDE ANALYZER TO REMAIN</u>”</li> </ul>
M-208	<ul style="list-style-type: none"> <li>- Revise callout for new finished water quality analyzer in laboratory as follows; “FINISH WATER QUALITY ANALYZER (40”H x 20”W x 10”DP). MOUNT TO WALL <u>AND</u> CONNECT TO FINISH WATER SAMPLE LINE. SEE SCHEMATIC SHEET NO. <del>M-502</del> <u>M-503</u>”</li> </ul>

This Addendum is provided to Bidders in a single Portable Document Format (.PDF) posted on the City's website and will be available for examination at the Issuing Office. It is each Bidder's responsibility to check the website for Addenda per the Instructions to Bidders.

Bidders must comply with the requirements for submission of Bids in the Instructions to Bidders and the Bidding Documents remain unchanged except as indicated above.

**Prepared and Issued by Woodard & Curran (Engineer) on behalf of:**  
*City of Marlborough, MA (Owner)*  
*Department of Public Works*

**END OF SECTION**

**LIST OF ATTENDEES  
PRE-BID CONFERENCE**

CITY OF MARLBOROUGH, MA  
DEPARTMENT OF PUBLIC WORKS

MILHAM WATER TREATMENT PLANT UPGRADES

CONTRACT 2015-13

DWSRF 3885

PRE-BID CONFERENCE  
225 BOUNDARY STREET

October 15, 2014 at 10:00 AM

LIST OF ATTENDEES

NO.	NAME	COMPANY	TITLE	TELEPHONE NUMBER	FAX NUMBER
1	Phil Daurick	Eug Elak Co.	Paul	603-463-8852	603-463-9323
2	Tim O'Toole	AMH Electric Inc	President	978-422-8400	978-422-3500
3	Chris Delioianis	Shirview Inc	President	508-888-1910	508-888-7814
4	Mike Sparks	FR Mahony	Sales Associate	781-561-6555	781-982-1254
5	George Weber	WTC	Exec. Sub.	860-808-6293	
6	Pauline Osheng	"	"	"	

NO.	NAME	COMPANY	TITLE	TELEPHONE NUMBER	FAX NUMBER
7	Nathan Little	WIC	Engineer	978-557-8150	
8	Rachel Gilbert	"	Project Manager	"	-
9	Bob Chappel	"	"	"	
10	ANCE STRAU	UTEN REPAIRS TRACK SAFETY	TERRITORY MANAGER	727-232-8760	LSTRAUB@UR.COM
11	Bill McMahon	RB Car Co Inc	Chief Estimator - Associate	508-432-0530	wbmcmahon@robcar.com
12	Damon Birchall	RB " " "	Supervisor - Pm	" " "	dbirchall@robcar.com
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CITY OF MARLBOROUGH, MA  
DEPARTMENT OF PUBLIC WORKS

MILLHAM WATER TREATMENT PLANT UPGRADES

CONTRACT 2015-13

DWSRF 3885

PRE-BID CONFERENCE  
225 BOUNDARY STREET

October 15, 2014 at 10:00 AM

LIST OF ATTENDEES

NO.	NAME	COMPANY	TITLE	TELEPHONE NUMBER	FAX NUMBER
1	ARBORETTI	MORRIS + SMITH	MGR	888-800-1595	688-8284
2	JEFF NYER	KIN STON BUILDERS	TREAS/OWNER	508 366 1767	508 898 3888
3	SOB DUBOIS	Water Dept	Cost Control	603 365-6431	603 424-8578
4	DAVE TRUSSARDI	OUTERISE	PM	781 331 0900	781 337 2940
5	ANDY NEASE	CSI	ESTIMATOR	508 922 2377	
6	ERIC DEAR	ROYAL STEIN HENNER	PM	978 632 0770	978 632 2468

NO.	NAME	COMPANY	TITLE	TELEPHONE NUMBER	FAX NUMBER
7	LARRY STROHL	UNITED TRUCK REPAIRS	TERMINAL MANAGER	774-234-8760	
8	MARK SOUTS	COMPUS T GRIFFIN ELECTRIC	SR. ESTIMATOR	508-306-5458	508-429-9251
9	ED BARBATO	BARBATO CONST	V. P.	508-946-9414	508-946-9414
10	John Barry	Zeller Corp		508-530-8110	
11	CHRIS MATRISON	METROPOLITAN CONG	Gen. Man	508-376-2061	508-376-4418
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**POLLUTION LIABILITY INSURANCE REFERENCES  
(FOR INFORMATIONAL PURPOSES ONLY)**



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## Contractor's Professional Liability and the CGL

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October 2012

**Yes, coverage of some professional liability exposures is available under the commercial general liability (CGL) policy, depending on how the policy is modified by endorsements. Unfortunately, many insurance professionals offering insurance and risk management services to contractors are still not sure about the differences between the various alternatives available to their clients for professional liability under the CGL policy.**

by [Jeff Slivka](#)  
[New Day Underwriting Managers](#)

There are vast differences between the CGL and a common contractors professional liability (CPrL) policy, such as:

- The CGL is an occurrence-based policy while the CPrL is always claims-made.
- The CGL policy provides no limit for payment of defense costs while the CPrL limits total payment, including defense, to the limit of liability purchased.
- The CGL usually carries a lower deductible, if any at all, and many CPrL programs typically apply a \$25,000 per-claim deductible or higher.
- The CGL responds to bodily injury and property damages, while the CPrL responds to a broader form of damages.
- Most insurers writing general liability coverage for contractors attach professional liability exclusions to their policies as a matter of course.

With that said, it is important to understand how these differences influence organizations to purchase CPrL *in addition* to the CGL. One of the prominent benefits is the difference in covered damages. The CPrL provides broad coverage for damages—defined differently by each insurer but generally defined as a monetary judgment, award, or settlement of compensatory damages and where allowable by law, punitive damages; whereas the CGL is much more restrictive. The CGL provides coverage only if bodily injury or property damage occurs. Keeping it simple, economic damages, such as acceleration costs, delay damages, cost for remedial design, reconstruction, and the like arising out of professional services performed by or on behalf of the named insured would not be a covered loss under the CGL but would be covered under the CPrL.

One of the deciding factors determining whether the CGL will respond to professional liability is the insurer—its underwriting philosophy with respect to contractors' professional exposures, and the scope of professional exclusions it customarily endorses onto the policy. Almost all CGL insurers now insist on some sort of professional liability exclusion when a policy is issued to a contractor. Not all insurers offer the two less restrictive standard Insurance Services Office, Inc. (ISO), endorsements discussed below. Nonetheless, the availability of CG 22 79 or CG 22 80 as an alternative to a sweeping professional exclusion like CG 22 43 should be explored with each CGL insurer to determine its willingness to offer such coverage.

Let's examine the three endorsements commonly used by insurers to define the CGL policy's professional liability coverage for contractors.

- CG 22 43—Broad Professional Liability Exclusion Endorsement (loosely interpreted)
- CG 22 79—Construction Means and Methods Endorsement (loosely interpreted)
- CG 22 80—Design Build Endorsement (loosely interpreted)

Most contractors shopping for CGL coverage will have to accept one or another of these endorsements, depending on the insurer's willingness to insure a range of contractors' professional liability exposures.

### Endorsement CG 22 43

ISO endorsement CG 22 43 is pretty straightforward. It is a broad exclusion of professional services performed by or on behalf of the named insured. If this exclusion is attached to the CGL, and the contractor is providing any of the professional services defined in the exclusion, it would be prudent to have this exclusion removed and replaced with either CG 22 79 or CG 22 80, and explore the need for CPRL coverage.

## Endorsement CG 22 79

This *less restrictive* endorsement was developed to correct the deficiencies of CG 22 43 with respect to construction means, methods, sequences, and techniques of the contractor. Simply put, construction means and methods are those processes or techniques that contractors use during the course of construction to construct a building or structure. Endorsement CG 22 79 excludes coverage for professional services defined within the endorsement as:

- preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders, change orders, or drawings and specifications; supervisory or inspection activities performed as part of any related architectural or engineering activities.

However, it does provide some level of coverage for the construction means and methods with an exception to the definition of professional services:

- Professional services do not include services within the construction means, methods, techniques, sequences and procedures employed by you in connection with your operations in your capacity as a construction contractor.

No doubt, this affirmatively broadens coverage for a contractor as compared with the use of CG 22 43, but there is a limiting factor associated with it. The operative phrase in the above exception is "employed by you in connection with your operations." While the intent of this endorsement is to provide coverage for services within the construction means, methods, etc., it is apparent that if professional services related to construction means/methods were performed *on behalf* of the contractor, coverage may not exist.

For example, claims arising out of the design of false work on a bridge project performed by a licensed professional engineer subcontracted with the general contractor (GC) may not be covered under this endorsement if the GC had this endorsement on the policy.

Another example would be shoring/trenching on a parking structure project. Had a subcontractor performed the design for the shoring/sheeting on the project, the GC would have no coverage as the work was not performed by the named insured. In essence, this endorsement provides virtually no coverage for those GCs that perform no work. However, in the event the subcontractor has the CG 22 79 attached to its CGL policy and provides additional insured status to the GC, the GC may have some level of protection regardless.

Although there is some element of coverage for professional liability, this endorsement still falls short of adequately addressing professional liability associated with various professional services performed by many construction firms such as construction management, pre-construction consulting services and design-build services.

## Endorsement CG 22 80

ISO endorsement CG 22 80 was created to address professional liability exposures for contractors while performing design-build services or for any professional services performed on their behalf. It provides coverage for professional services, as defined in the endorsement, performed on the named insured's behalf. It explicitly excludes coverage for professional services performed by the named insured.

Although the endorsement does provide enhanced coverage, it does have its limitations:

- It only provides coverage for bodily injury and property damage—the basis for the CGL coverage form. This is extremely important to remember: it does not provide coverage for economic damages as discussed earlier.
- It does not provide coverage for professional services performed by the named insured, which may be construction management, pre-construction consulting services, value engineering, scheduling, inspection services, subcontractor management, etc.

In summary, as long as the CGL insurer is willing to forgo the use of exclusionary endorsement CG 22 43 in favor of CG 22 79, CG 22 80, or both (depending on the professional services provided by the construction firm), it would be a prudent first step in attempting to address a contractor's professional liability. Even if it

only allows for payment of defense costs, it is a huge advantage, since all CPRL programs cap the limit of liability at the aggregate limit of the program purchased. 2014

Don't fool yourself, however. There are many limitations to the endorsements, primarily due to the fact that the CGL only covers bodily injury and property damage. To fully insure a contractor's professional liability exposure, CPRL coverage should be investigated.

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## Contractors Professional Liability—A Market Update

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May 2014

**The contractors professional liability (CPrL) market continues to expand—in both coverage and the number of insurers willing to offer such coverage. In addition, the number of contractors purchasing CPrL has increased over the past year as construction professionals become more educated on the risk and the potential resulting claims and face contractual arrangements they may not have faced in the past. It doesn't hurt that the cost of CPrL for your average contractor is much less expensive than it was 3 years ago.**

by [Jeff Slivka](#)  
[New Day Underwriting Managers](#)

Basically speaking, CPrL provides coverage for damages arising out of acts, errors, and omissions from professional services performed by or on behalf of any construction firm, be it by a general contractor, design-builder, construction manager (at-risk or agency), or specialty subcontractor. In addition to third-party liability, some CPrL programs offer first-party coverage, such as "protective" coverage or mitigation of loss (MOL) coverage (also known as rectification). Protective coverage indemnifies the named insured for costs it incurs, excess of the design professional's (DP's) professional liability insurance, that the named insured is legally entitled to recover, as a result of negligent acts, errors, and omissions committed by DPs under contract with the named insured.

Whereas contractors protective coverage supplements the DP's professional liability insurance, MOL or rectification essentially replaces the DP's insurance solely with respect to the costs incurred by the named insured to remedy design errors discovered during the course of construction that would otherwise result in professional liability claims if not corrected.

### Trends

Below are a few major trends and observations associated with CPrL insurance.

- Insurers continue to expand into this area of insurance. Over the past year, 3 new markets began offering a CPrL-type product on a primary basis, bringing the total of domestic insurers to about 15 with an additional 5 or 6 foreign insurers offering this product. Expect to see another 2 to 3 insurers develop CPrL programs in 2014, but all will focus on the small- to middle-market contractors. For larger construction firms, the same markets will exist as in 2013, for both primary and excess positions.
- Coverage expansion continues with the offering of such supplemental coverages as crisis management coverage, building information modeling extra expense coverage, disaster response expense, corporate reputation coverage, and bankruptcy of DP coverage.
- Expect "new and improved" forms. Nearly every major insurer has plans to "reinvent," expand, revise, update, or modify its policy forms in 2014. While, on one hand, this is good news, on the other hand, it is getting more and more difficult to track the changes, differences, and enhancements to these programs. Also, expect to see insurers creating enhanced forms that specifically address the unique professional risk associated with integrated project delivery (IPD) and public-private partnerships (P3).
- Rectification and mitigation of damages coverage is becoming more prevalent. Several insurers now offer such coverage, bringing the total to seven. In addition, excess insurers are more willing to follow this first-party coverage in the event that higher capacity is needed. Expect the number of insurers to expand in 2014, but, in addition and most importantly, expect insurers to build "bench" strength in their claims departments, as these coverages are very different from typical liability claims and can

present unusual circumstances for some. Lastly, look for rectification/mitigation to be offered more as a supplemental coverage part than as a sublimit of the liability coverage.

- Project professional liability coverage is still scarce, with only three or four insurers willing to offer project coverage (with the ability to include protective and rectification/mitigation coverage) on a primary basis for large (\$500 million or higher) projects. Coverage issues continue to exist with certain project delivery methods like IPD and P3 when the DP becomes part of the primary named insured and when DPs are part of a joint venture created to pursue a project. For smaller (\$100 million and less) projects, several newer markets are beginning to respond to meet this need. Expect to see an increase in the number of insurers offering project coverage on smaller projects, especially when the need is merely driven by a contractual obligation. Expect this trend to continue with a slight change in program structure to address the different contract obligations that may arise over the year.
- Speaking of contractual obligations, the number of entities requiring project CPRL continues to rise. Unfortunately, some of the requirements are focused on insuring the DP or the design team, leaving the contractor to look to its practice program or other alternatives to finance losses associated with its professional liability. In 2014, look for this trend to continue, with one exception: owners will realize it's more prudent to insure the project against all professional liability than just against design liability.
- Project policy terms and extended reporting period (ERP) provisions may expand. Currently, all markets offer a 10-year maximum total program—policy term (construction period) plus ERP. However, there is an increasing demand for ERPs to match a state's statute of repose. Look for a number of markets to begin offering 10-year ERPs regardless of the construction duration.
- The number of both first- and third-party claims increased by 20 to 30 percent compared to last year, as reported by a few major CPRL insurers. This should be no surprise, as buyers of CPRL continue to increase, rectification/mitigation-type claims have a shorter payout period, premiums and self-insured retentions have shrunk, and coverage over the past 3 years has expanded greatly. As more buyers enter the marketplace, as new liability arises, as the first-party coverages become more prevalent, and as the market for CPRL matures, expect to see an increase in claims activity in 2014. To see examples of lawsuits, settlements, claims, and incidents, please visit New Day's [blog](#).
- One claims trend that became prevalent in 2013 is the late reporting of claims by insureds. Regardless of the reason for the late reporting, insurance buyers should understand and comply with the claims-reporting provisions in their policies to avoid unnecessary denials of coverage. Insureds need to ensure that procedures are in place to report potential errors, problems, and claims as well as claims that may only appear to be general liability claims.
- Rates continue to hold relatively flat for just about every size contractor, provided that project type, revenue, delivery method, and claims history remain static. Some insurers are beginning to push for rate hikes, with a desire to see 3 to 4 percent rate increases. However, such increases are beginning to invite competition from the newer or more aggressive insurers.
- The trend toward combining the CPRL with contractors pollution liability (CPL) continues, mostly in the middle (\$50 million to \$250 million) and small (\$50 million and below) markets where they need to leverage premiums, but some larger (\$500 million and above) contractors take advantage of the combined CPRL/CPL as well. In addition, the pollution-type coverages (such as pollution legal liability for an insured's locations, nonowned disposal site coverage, emergency response costs coverage, and transportation coverage) available under combined forms are just as broad as, if not broader than, under monoline CPL programs. Expect this trend to continue in 2014, taking a larger bite out of the environmental insurance market's CPL premiums.
- When it comes to underwriting information (contracts, loss runs, financials, etc.), insurers began requiring ALL information prior to binding. While this is nothing new, the trend for 2014 will be for underwriters to hold steadfast to that condition. It would be prudent to get all the information to the underwriter prior to binding.

## A Look Ahead

With an expanding market, look for 2014 to bring continual coverage expansion and for rates to be flat to slight 1 to 2 percent rate increases. In addition, with the expansion of the rectification and mitigation of damages coverage, now, more than ever, attention should be given to the quality of claims personnel within the insurer offering such coverage. Education on the key issues (exposures, claims, coverage, program

structure, contract specifications, etc.) will continue to play a key role in the development of this line of insurance. And lastly, let's hope for some relief in the project CPrL arena. It's not expected, but we can hope. At a minimum, let's work to clean up some of those contract specifications to ensure the project is insured, rather than certain aspects or portions of it.

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## contractors environmental liability (CEL) insurance

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This policy fills the coverage gaps created by pollution/fungus/mold/bacteria/Category 3 water/asbestos/lead/contaminated drywall exclusions that are common in the liability insurance policies purchased by contractors. CEL insurance provides coverage for bodily injury, property damage, defense costs, cleanup, and restoration expenses **arising from the insured operations of the contractor.** Insurance market capacity for high-quality coverage exceeds \$100 million. Minimum premium for a good quality CEL policy covering Category 3 water loss exposures is about \$3,500 as of the date of this writing.

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Contractors Pollution Liability      SEE ALSO "CONTRACTORS ENVIRONMENTAL LIABILITY

Contractors pollution liability (CPL) is a contractor-based policy, offered on a claims-made or occurrence basis, that provides third-party coverage for bodily injury, property damage, defense, and cleanup as a result of pollution conditions (sudden/accidental and gradual) arising from contracting operations performed by or on behalf of the contractor.

CPL is available to any type of contractor performing operations or conducting work. From environmental or remedial contractors to general and specialty trades, CPL has become a viable financing option for environmental loss providing insurance for large or even catastrophic loss scenarios at a reasonable premium.

Policies can be offered on a project or blanket program basis. Project policies provide coverage for all operations performed by the insured during the construction period and can include "tail" coverage (extended reporting period or ERP for claims made policies and completed operations for occurrence policies) to address the statutes of repose in many states or other contractual requirements. Usually a maximum term of 10 years is offered. Additionally, wrap-up programs can be implemented to afford coverage for all contractors regardless of activity undertaken (environmental or nonenvironmental) on a specific project. A blanket program provides coverage on an annual basis for all defined covered operations taking place during the policy term.

**SPECIFICATIONS  
REPLACEMENT PAGES**

**TOTAL  
PAGES**

**SPECIFICATIONS (CONTINUED)**

**DIVISION 26 ELECTRICAL**

26 05 00	Common Work Results For Electrical	9
26 05 19	Low-Voltage Electrical Power Conductors and Cables	8
26 05 26	Grounding and Bonding for Electrical Systems	5
26 05 34	Raceways, Boxes and Supporting Devices	13
26 05 43	Underground Ducts and Raceways for Electrical Systems	12
26 24 19	Motor Control Center	13
26 27 00	Low Voltage Distribution Equipment	4
26 27 26	Wiring Devices	7
26 28 16	Enclosed Switches and Circuit Breakers	6
26 29 13	Enclosed Controllers	8
26 29 23	Variable Frequency Motor Controllers	14
26 50 00	Lighting	16

**DIVISION 31 EARTHWORK**

31 00 00	Earthwork	15
31 05 19	Geotextile Fabrics	5
31 10 00	Site Clearing	5
<del>31 25 00</del>	<del>Erosion Controls</del>	<del>9</del>

**DIVISION 32 EXTERIOR IMPROVEMENTS**

32 12 16	Asphalt Paving	3
32 31 13	Chain Link Fences and Gates	12
32 90 00	Planting	3

**DIVISION 33 UTILITIES**

33 11 00	Water Utility Distribution Piping	21
33 41 00	Storm Utility Drainage Piping	3

**DIVISION 40 PROCESS INTEGRATION**

40 00 00	Basic Process Material and Methods	15
40 05 13	Process Pipe and Fittings	15
40 05 14	Process Pipe Couplings and Connectors	15
40 05 15	Process Pipe Supports	19
40 05 17	Process Pipe Sleeves and Seals	8
40 05 23	Process Valves and Strainers	31
40 90 00	Instrumentation and Control for Process Systems	5
40 91 00	Primary Process Measurement Devices	23
40 94 33	Human-Machine Interfaces	4
40 94 43	Programmable Logic Controllers	5
40 95 13	Process Control Panels and Hardware	13

**TOTAL  
PAGES**

**SPECIFICATIONS (CONTINUED)**

**DIVISION 43 PROCESS GAS AND LIQUID HANDLING, PURIFICATION, & STORAGE EQUIPMENT**

43 21 00 Liquid Pumps 21

**DIVISION 46 WATER AND WASTEWATER EQUIPMENT**

46 33 00 Water Treatment Chemical Feed Equipment 39

46 41 17 Inline Static Mixers 6

46 43 00 Clarifier Equipment 6

46 61 00 Filtration Equipment 12

46 66 00 Ultraviolet Disinfection Equipment 18

**ATTACHMENTS**

Instrumentation and Control Drawings (Bound Separately) 49

**END OF SECTION**

- I. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and
  - J. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.
- 4.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

#### ARTICLE 5 – PRE-BID CONFERENCE

- 5.01 A pre bid conference will be held at the time, date and location as indicated in the Invitation to Bid. Bidders are strongly encouraged to attend and participate in the conference.
- 5.02 Addenda will be transmitted to all prospective Bidders of record considered necessary in response to questions arising at the conference by email posting on the City's website. Oral statements may not be relied upon and will not be binding or legally effective. It is each Bidder's responsibility to check the website for Addenda.

#### ARTICLE 6 – SITE AND OTHER AREAS

- 6.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

## ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to the Engineer in writing as follows. Submission of questions via email or fax is acceptable.

Woodard & Curran  
40 Shattuck Road – Suite 110  
Andover, MA 01810  
Attention: Rachel Gilbert  
Telephone (978) 557-8150  
Email: rgilbert@woodardcurran.com

7.02 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda. Questions received less than 7 days prior to the date for opening of Bids will not be answered. Only answers in the Addenda will be binding. Oral statements, interpretations, and clarifications may not be relied upon and will not be binding or legally effective.

7.03 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer. Addenda will be available for examination at the Issuing Office and will be posted on the Owner's website as stated in the Invitation to Bid, and will NOT be mailed or faxed to registered Bidders. **It is each Bidder's responsibility to check the website for Addenda.**

## ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder's maximum Bid price and in the form of a certified check, treasurer's or cashier's check, or money order, or a Bid bond on or consistent with the form included in the Bidding Documents in Section 00 43 13 issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 of the Standard General and Supplementary Conditions, if any.

8.02 The Bid security of the Successful Bidder will be retained until such Bidder has furnished the required contract security, met the conditions of the Notice of Intent to Award (if any) and Notice of Award, and executed the Agreement, whereupon the Bid security will be returned. If the Successful Bidder fails to comply with the conditions set forth in the Notice of Intent to Award (if any) and Notice of Award within the time specified therein, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Agreement or 61 days after the Bid

**Sub-Bid Items S1 through S5:**

Sub-trade	Name of Sub-Bidder	Amount	Bonds required (Yes or No)
Item S1: Masonry		\$	<del>Yes</del>
Item S2: Painting		\$	<del>Yes</del>
Item S3: Plumbing		\$	<del>Yes</del>
Item S4: HVAC		\$	<del>Yes</del>
Item S5: Electrical		\$	<del>Yes</del>

The Undersigned agrees that each of the above named Sub-Bidders will be used for the Work indicated at the amount stated, unless a substitution is made. The Undersigned further agrees to pay the premiums for the performance and payment bonds furnished by Sub-Bidders as requested herein and that all of the cost of all such premiums is included in the amount set forth in Item G of this Bid.

The Undersigned agrees that if selected as General Contractor, Undersigned will promptly confer with the Awarding Authority on the question of Sub-Bidders; and that the Awarding Authority may substitute for any sub-Bid listed above, a sub-Bid filed with the Awarding Authority by another Sub-Bidder for the sub-trade against whose standing and ability the Undersigned makes no objection; and that the Undersigned will use all such finally selected Sub-Bidders at the amounts named in their respective sub-Bids and be in every way as responsible for them and their Work as if they had been originally named in this General Bid, the total Contract Price being adjusted to conform thereto.

- E. The Undersigned agrees that, if selected as General Contractor, Undersigned will within 5 days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the Awarding Authority, execute a Contract in accordance with the terms of this Bid and the Contract Documents and furnish a performance bond and also a labor and materials or payment bond, each of a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Awarding Authority and each in the sum of the Contract Price, the premiums for which are to be paid by the General Contractor and are included in the Contract Price; provided however that if there is more than 1 surety company, the surety companies shall be jointly and severally liable.

The Undersigned hereby certifies that Undersigned is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the Work; that all employees to be employed at the Work Site will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that Undersigned will comply fully with all Laws and Regulations applicable to awards made subject to MGL Chapter 149, Section 44A.

The Undersigned further certifies under the penalties of perjury that this Bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection, the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The Undersigned further certifies under penalty of perjury that the said Undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of Chapter 29, Section 29F, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or Regulation promulgated thereunder.

## SECTION 00 43 40

### INFORMATION, SCHEDULES AND DATA

#### SCHEDULE

General Bidder shall Provide provide a proposed Project Schedule based on a Notice to Proceed on approximately 1/5/2015, a Substantial Completion Date of 11/16/2015 and final completion 12/31/2015. The schedule shall be presented in sufficient detail for the Owner to evaluate the General Bidder's ability to perform the Work within the Contract Times and shall include:

- milestones related to submittal schedules, procurement, construction, and checkout & functional testing;
- sequencing to limit impacts from construction; and
- special sequencing and coordination for plant shutdown specified in 01 11 00.

#### INSURANCE AND BONDS

Submit evidence of General Bidder's ability to comply with specified insurance and bonding requirements including names of insurance companies and sureties.

#### WORK PLAN

Submit a narrative work plan describing the General Bidder's approach to the successful execution of the Work to accommodate the proposed Project Schedule and provide for special requirements. Allow for review of submittals, coordination, and development of detailed construction sequencing and coordination; and compliance with special requirements.

Describe:

- how schedule progress will be measured and tracked;
- how the Schedule of Values and cash flow will be determined and how progress for payment will be determined;
- how documents will be controlled to assure that the appropriate revision is used in design, procurement, and construction/installation; and
- special sequencing and coordination for plant shutdown specified in 01 11 00.

## CONSUMABLES, SPARE PARTS AND SPECIAL TOOLS

General Bidder to sSubmit a complete list of recommended consumables, spare parts and special tools and pricing for the equipment to be furnished and installed by Contractor and Subcontractors, f.o.b. Site, ~~{including all taxes}~~excluding sales tax. Insert listing behind this page.

END OF SECTION

SECTION 00 43 93.01

SUB-BID SUBMITTAL CHECKLIST

Sub-Bidder confirms that the following documents are fully completed, included in and made part of its sub-Bid.

*Check that which applies:*

- 00 41 03.01 Form for Sub-Bid and Annex – MASONRY
- 00 41 03.02 Form for Sub-Bid and Annex – PAINTING
- 00 41 03.03 Form for Sub-Bid and Annex – PLUMBING
- 00 41 03.04 Form for Sub-Bid and Annex – HVAC
- 00 41 03.05 Form for Sub-Bid and Annex – ELECTRICAL

Submitted with each sub-Bid:

- 00 43 13 Bid Security Form
- OR
- Required Bid security in the form of \_\_\_\_\_
- 00 43 37 Proposed Suppliers Form
- ~~00 43 40 Information, Schedules and Data~~
- 00 45 05.01 Sub-Bidder's Representations and Certifications including required submittals:
  - o If a foreign corporation, certificate from the Secretary of State of the Commonwealth of Massachusetts that the corporation has complied with requirements of section 15.03 of subdivision A of Part 15 of chapter 156D and the date of compliance, and further has filed all annual reports required by section 16.22 of subdivision B of Part 16 of said chapter 156.
  - o Certificate of Good Standing with respect to all returns due and taxes from the Commonwealth of Massachusetts Department of Revenue.
- 00 45 19 Non-collusion Affidavit

- DCAMM Filed Sub-Bid Certificate of Contractor Eligibility (sample included at the end of Form for Sub-Bid)
- 00 45 56 DCAMM Sub-Bidder Update Statement
- 00 45 58 Statement of Intent to Comply with the Department of Environmental Protection's Diesel Retrofit Program
- One hardcopy, signed original (with original Bid security) of the above has been submitted to the Owner in accordance with 00 21 13.

CONFIRMED BY SUB-BIDDER ON:
By:
<i>Authorized person per Form for sub-Bid and Annex</i>

**END OF SECTION**

## SECTION 00 54 00

### AGREEMENT FORM SUPPLEMENTS

The following items supplement the Agreement and are incorporated into the Agreement and made a part thereof. Terms used herein will have the meanings stated in the Standard General Conditions and Supplementary Conditions.

#### 1.01 Engineer

The Project has been designed by Woodard & Curran, Inc. (Engineer) which is to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

#### 1.02 Liquidated Damages

- A. Contractor and Owner recognize that time is of the essence and that Owner will suffer financial loss if the Work is not completed within the times specified in Article 2 of the Agreement, plus any extensions thereof allowed in accordance with Article 12 of the Standard General Conditions and Supplementary Conditions, if any. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner **\$1000.00** for each day that expires after the time specified in Paragraph 4.02 above for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner **\$1000.00** for each day that expires after the time specified in Article 2 of the Agreement for completion and readiness for final payment until the Work is completed and ready for final payment.

#### 1.03 Actual Damages: Contractor shall be responsible for the following actual damages that Owner may incur, in whole or in part, to the extent caused by the Contractor in accordance with Paragraph 12.03 of the General Conditions.

- A. Penalty for Violation of MassDEP Consent Order: Administrative Consent Order with Penalty and Notice of Noncompliance File No. ACOP-CE-14-5D002 Paragraph 8.D states: "On or before December 31, 2015, Respondent [City] shall complete construction of the treatment plant modifications and commence enhanced treatment, meeting SWTR Cryptosporidium requirements, at the Millham Water Treatment Plant." Contractor shall be responsible for penalties incurred (or portion thereof) cited in Paragraph 14 of the ACO: "...if Respondent violates Paragraph 8.D of this Consent Order, Respondent shall pay to the Commonwealth the full amount of eighteen thousand one hundred and ten dollars

(\$18,110) within thirty (30) ~~(3)~~ days of the date MassDEP issues Respondent a written demand for payment.” due to delays caused by Contractor.

- B. Cost of Water from MWRA: The Millham Water Treatment Plant must continue to operate during the construction period except during scheduled shutdowns coordinated with the Owner and Engineer. Contractor shall pay actual damages incurred by Owner (or portion thereof) for cost of water from MWRA due to: 1) shutdowns not scheduled or anticipated as part of the Work; and, 2) prolonged or extended shutdowns longer than the duration stipulated in the Contract Documents for scheduled shutdowns caused by Contractor.

#### 1.04 Payment Procedures

- A. Contractor shall submit Applications for Payment in accordance with Article 14 of the Standard General Conditions and Supplementary Conditions, if any. Applications for Payment will be processed by Engineer as provided in the Standard General Conditions and Supplementary Conditions, if any, and the General Requirements.
- B. Progress Payments: Owner shall make progress payments on account of the Contract Price on the basis of Contractor’s Applications for Payment as provided in Paragraph 1.04.B.1 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the Standard General Conditions and Supplementary Conditions, if any, (and in the case of Unit Price Work based on the number of units completed).
1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the Standard General Conditions and Supplementary Conditions, if any, and additional retainage allowed by Laws and Regulations.
- a. **Progress Payments of 95 percent for Work completed (with the balance of 5 percent being retainage).** If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and
- b. **95 percent of cost of materials and equipment not incorporated in the Work (with the balance of 5 percent being retainage).**

### **SC-4.02 Subsurface and Physical Conditions**

- A. Pursuant to Paragraph 4.02.A,
1. the following reports of explorations and tests of subsurface conditions at or contiguous to the Site are known to Owner:
    - a. Report dated May 1, 2014 revised June 20, 2014 prepared by S.W. Cole Engineering, Inc. entitled Geotechnical Engineering Services consisting of 23 pages.  
  
All of the information in such report constitutes “technical data”.  
  
The “technical data” shall be limited to facts, measurements, field observations, boring logs, soil type and similar data. “Technical data” shall not include opinions regarding suitability of material, dewatering methodologies, soil stability, slope stabilization methods and other opinions or professional judgments.
  2. The following drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) are known to Owner:
    - None

### **SC 4.05 Reference Points**

Pursuant to Paragraph 4.05.A, surveys exist for the Project and are reflected on the Drawings.

### **SC-4.06 Hazardous Environmental Conditions at Site**

- B. Pursuant to Paragraph 4.06.A,
1. the following reports regarding Hazardous Environmental Conditions at the Site are known to Owner:
    - a. NONE
  2. The following drawings regarding Hazardous Environmental Conditions at the Site are known to Owner:
    - a. NONE

### SC-5.04 Contractor's Insurance

In Paragraph C, modify the listed coverage as follows.

2. Contractor's General Liability: \$1,000,000 Bodily Injury and Property Damage Liability, Combined Single Limit with a \$3,000,000 Annual Aggregate Limit
  - Broad Form Property Damage Liability including coverage for acts of terrorism
  - Completed Operations and Product Liability – maintained for 3 years after completion of Project
  - Contractual Liability
  - Pollution Liability
  - Independent Contractors
  - Explosion, Collapse & Underground Hazards
  - Personal Injury Coverage, Exclusion "C" Deleted
  - Fire Legal Liability
  - Pollution Liability

Excess or Umbrella Liability: \$5,000,000 per occurrence; \$5,000,000 general aggregate
3. Automobile Liability under Paragraph 5.04.A.6 of the General Conditions: \$1,000,000 per accident for bodily injury & property damage covering Contractor and any vehicles owned, hired and non-owned by the Contractor
4. Professional Liability (E&O for engineers, architects or surveyors): \$1,000,000 per occurrence, \$3,000,000 aggregate if professional services are required under the Specifications.
5. Owners Protective Liability (OCIP): Not required

**SC-5.07 Waiver of Rights:** Replace Paragraph A. in its entirety with “(Not Used)” and delete Paragraphs B. and C. in their entirety.

### SC-6.02 Labor; Working Hours

Pursuant to Paragraph 6.02.B, regular working hours for this Project are 7:00 a.m. to 3:00 p.m., Monday through Friday. No construction shall be allowed on Saturdays, Sundays or Holidays without written authorization from the Owner. The Owner will provide personnel for assistance at no cost to the Contractor during the Owner's normal working hours (Monday through Friday 7:00 a.m. to 3:00 p.m.). When this assistance is required by the Contractor outside the Owner's normal working hours, the cost will be incurred by the Contractor at the prevailing overtime rate of pay for the personnel providing the assistance. The Owner will bill the Contractor directly.

5. Suction Size, minimum: 6 IN.
6. Design Capacity: 1,300 US GPM
7. Design Head: 415 FT TDH
8. Efficiency at Design, minimum: 80%
9. Rotational Speed, maximum: 3,550 RPM
10. Impeller Size, minimum: 10.625 IN.
11. Shut-off Head, maximum: 494 FT
12. Drive Horsepower, maximum: 200 BHP
13. NPSHR at Design, maximum: 17 FT

C. Materials of Construction: The pump shall be of lead-free construction and be of the following material types, or approved equal:

1. Casing: Cast Iron (APCO-LOY 33)
2. Impeller: Low Zinc Silicon Bronze (ASTM B584 C97610)
3. Shaft: High Grade Steel (SAE 1045)
4. Shaft Sleeve: 316 SS
5. Mechanical Seals: PTFE Wedge Seals (John Crane Type 9 or equal)
6. O-rings: Buna N
7. Case Wear Rings: 316 SS
8. Bearing Housings: Cast Iron
9. Baseplate: Steel

D. Casing: Horizontal split case configuration, twin volute design meeting the following criteria:

1. The pump casing halves shall be of the inline piping design and will be constructed of cast iron having a minimum tensile strength of 30,000 psi and shall be of sufficient thickness to withstand stresses and strains at full operating pressures. Casings shall be shop tested under a hydrostatic pressure of at least 150% of the specified design head.

2. Bearing housing supports, suction and discharge flanges shall be integrally cast with the lower half of the casing. Bolt-on bearing arms will not be acceptable. Removal of the upper half of the casing must allow the rotating element to be removed without disconnecting the suction and discharge flanges.
  3. The casing shall have tapped and plugged holes for priming, vent, and drain. The lower portion shall have drain openings in the bearing arms for removal of lubricating liquid. The lower half of the casing shall be furnished with cored passageways from the high pressure area of the volute to each seal box for positive lubrication. In addition, an external flushing line from the discharge side of the casing to the upper seal box shall be provided. The upper casing is to be dowel aligned to the lower casing. The upper portion of casing shall have water-seal piping, ventcocks, and lifting lugs. The flushing lines should be ¼", 316 stainless steel tubing.
  4. The interior of the casing shall be smooth and free from defects. A coating shall be applied to the pump interior and shall be NSF 61 certified.
  5. Drilling and dimensions of the flanges shall conform to the ~~125# ANSI standard~~ ANSI/ASME B16.1 standard, Class 250 rating. Flanges shall be tapped for gauges.
- E. Impeller: Impeller shall meet the Service Conditions specified above. Impeller shall be vacuum cast in one piece and shall be of the enclosed double suction type. It shall be dynamically balanced and securely fastened to the shaft by key and screw locked shaft sleeves. The vanes shall be designed to reduce noise. The impeller shall be finished all over, the exterior being turned and polished and the interior finished smooth.
- F. Shaft: Accurately machined to give a true running rotating element. Shaft shall be one-piece, finished and polished on all sections and shall be of ample strength and rigidity and the shortest practicable distance between bearings shall be used to keep deflection and vibration to a minimum. The maximum allowable deflection of the shaft is 0.002" at any point of operation on the pump curve. Shaft shall be protected from wear by sleeves which are key locked and threaded so that the sleeves tighten with the rotation of the shaft. O-rings must be provided between the impeller hub and the shaft sleeves to prevent pumped liquid from contacting the shaft. The shaft sleeves shall extend from the hub of the impeller, through the seal box area, and beyond the gland.
- G. Wearing Rings: Pump shall be equipped with easily renewable casing rings designed so that hydraulic pressure will seat them against a shoulder in the pump case around the full periphery of the wearing ring to minimize leakage of water between the impeller and the casing and to minimize abrasion and corrosive wear

**DRAWINGS**  
**REPLACEMENT SHEETS**

1

2

3

4

5

6

A

B

C

D

A

B

C

D

- GENERAL NOTES:**
1. REFERENCE SHEET E-201 FOR GENERAL DEMOLITION NOTES.
  2. REFERENCE ONE LINE ONE SHEET E-020 FOR WIRE SIZES NOT SHOWN THIS SHEET.
- KEYED NOTES:**
1. DISCONNECT EXISTING CIRCUIT ASSOCIATED WITH EXISTING UNIT HEATER. PROVIDE NEW 120V, 20A CIRCUIT BACK TO SOURCE PANEL LOCATED IN LOW LIFT PUMP STATION. COORDINATE ALL WORK WITH HVAC (TYP. FOR 2).
  2. DISCONNECT AND REMOVE ALL ELECTRICAL ASSOCIATED WITH EXISTING ROOF MTD EXHAUST FAN. COORDINATE ALL WORK WITH HVAC.
  3. PROVIDE WALL-MOUNTED COMBINATION MOTOR STARTER TO SERVE NEW ROOF EXHAUST FAN 'F-3'. INTERLOCK WITH MOTORIZED DAMPER SHOWN. REFERENCE HVAC PLANS FOR THERMOSTAT LOCATIONS. REFERENCE SHEET E-602 FOR WIRING REQUIREMENTS.
  4. DISCONNECT ALL WIRING TO THE BUBBLER CONTROL PANEL AND REMOVE AND DISPOSE PANEL. PROVIDE A JUNCTION BOX FOR THE EXISTING 2 PAIR OF ANALOG CABLES TO THE MAIN PLANT. RECONNECT TO THE NEW LEVEL TRANSDUCER CABLES LOCATED IN WET WELLS #1 AND #2.
  5. PROVIDE A 15A, 120V CIRCUIT FOR UH-5 & 6 FROM EXISTING 208/120V PANEL BOARD.

40 Shattuck Road, Suite 110  
Andover, Massachusetts 01810  
866.702.6371 | www.woodardcurran.com

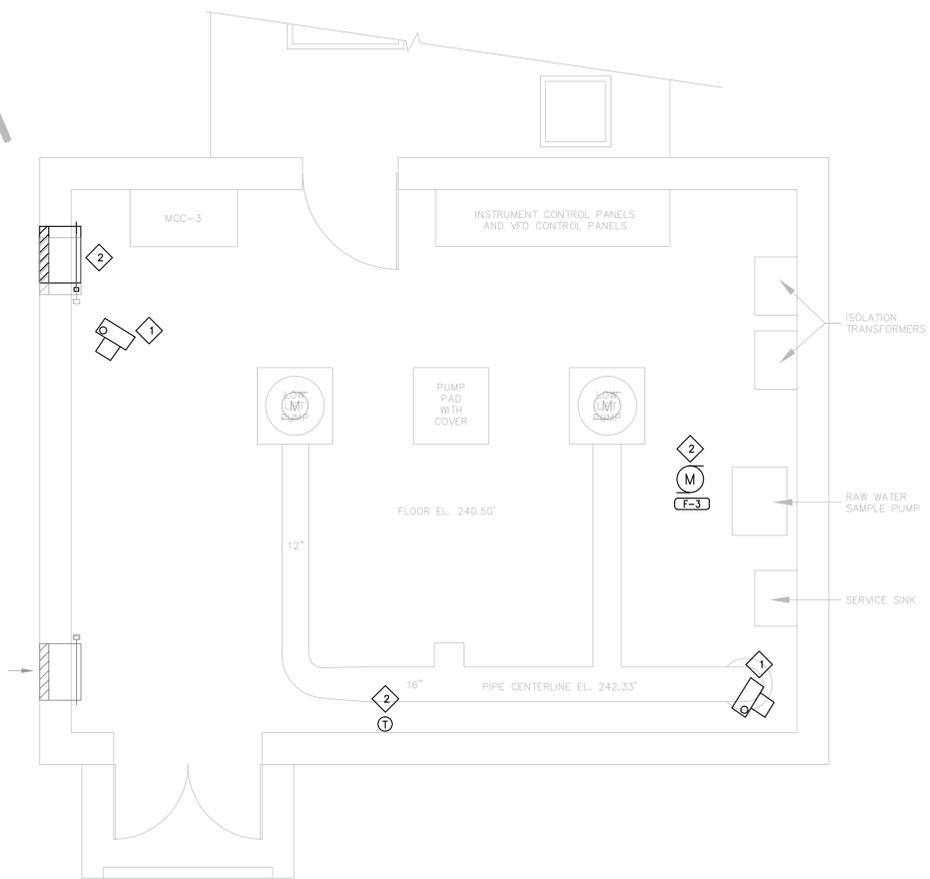
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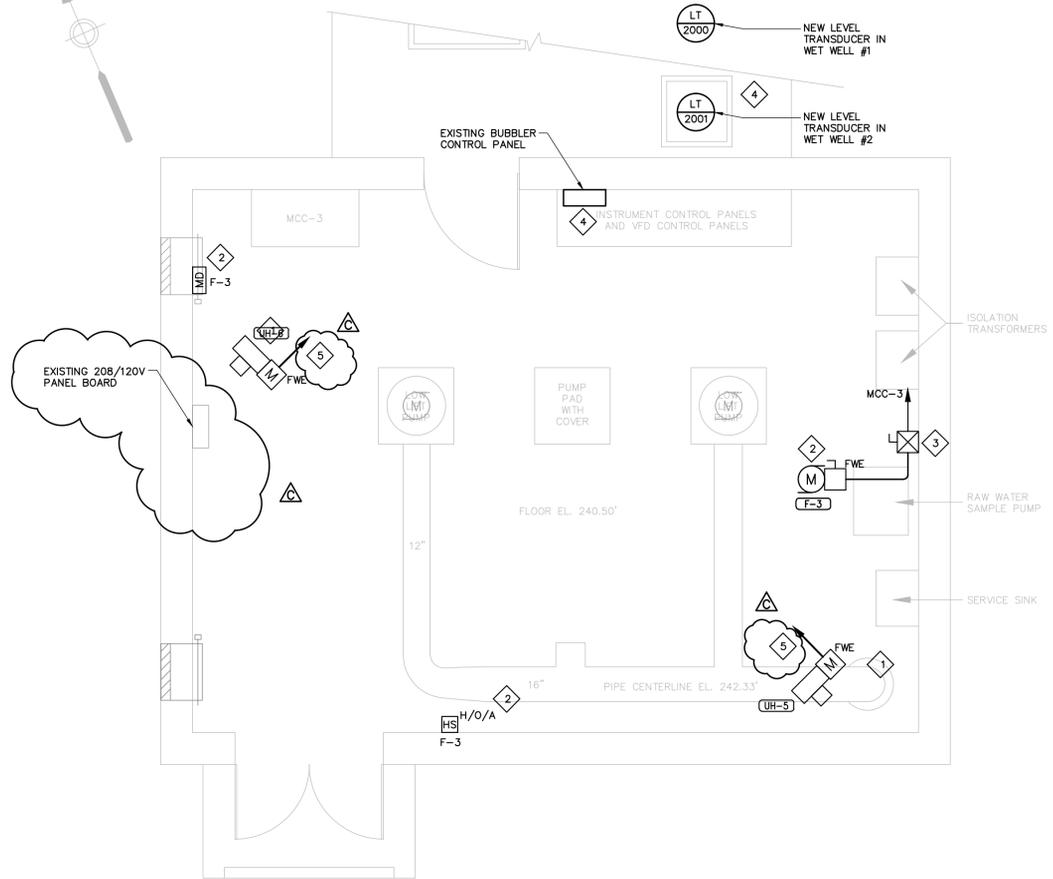


NO.	DATE	DESCRIPTION	CHECKED BY: GW
1	10/17/14	ISSUE FOR BID	ZORROR-EDLING
2	10/17/14	FOR MASSDEP REVIEW	
3	6/29/14	FOR MASSDEP REVIEW	

DESIGNED BY: GW  
DRAWN BY: SAA



**LOW LIFT FLOOR PLAN  
DEMOLITION**  
SCALE: 1/4" = 1'-0"



**LOW LIFT FLOOR PLAN  
NEW WORK**  
SCALE: 1/4" = 1'-0"

**RAW WATER (LOW LIFT)  
PUMP BUILDING  
ELECTRICAL PLANS**

DEPARTMENT OF PUBLIC WORKS  
MARLBOROUGH, MASSACHUSETTS

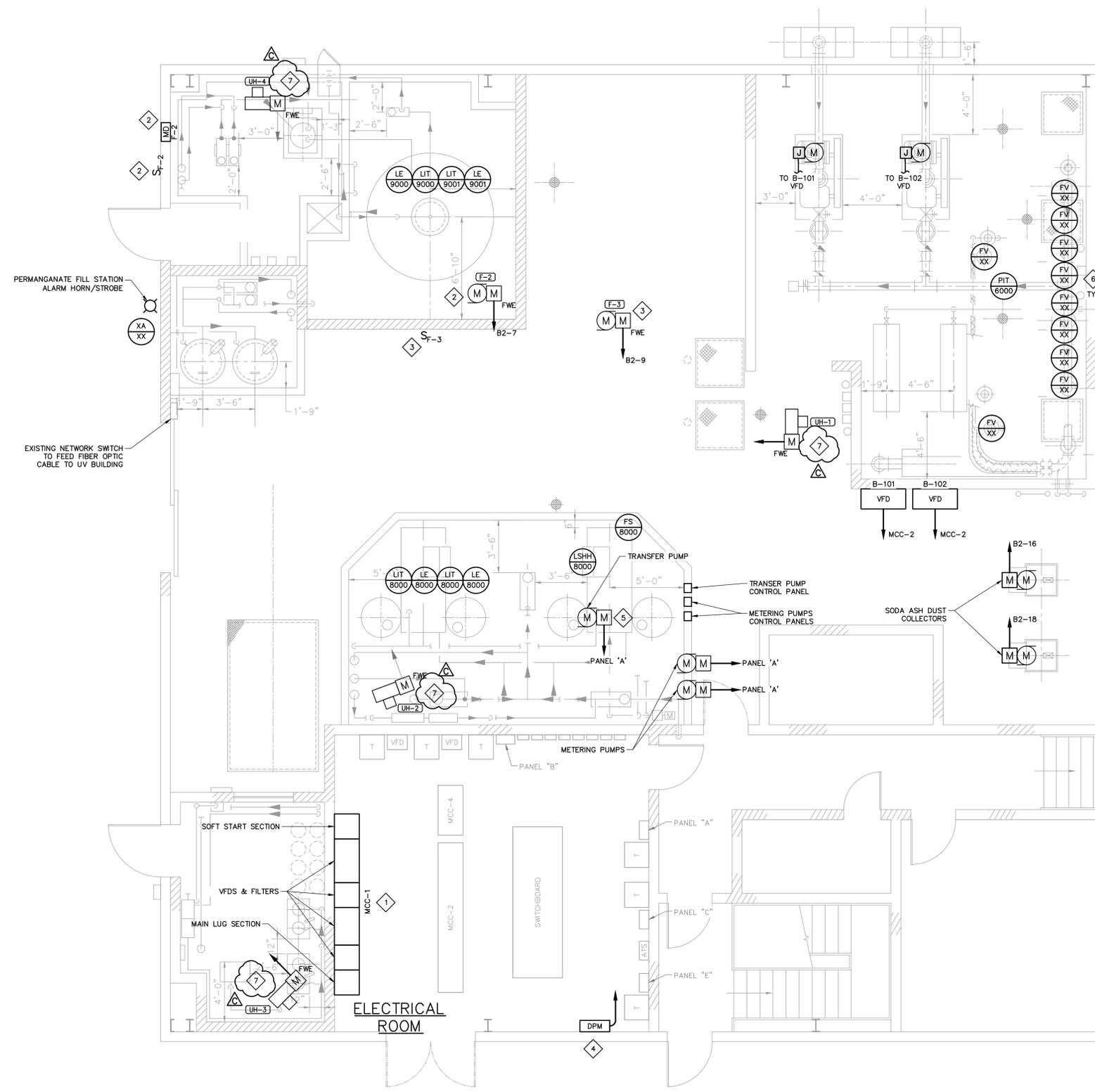
MILLHAM WATER TREATMENT PLANT  
UPGRADES

JOB NO.: 223811.01  
DATE: OCTOBER 2014  
SCALE: AS NOTED  
SHEET: 47 OF 71

**E-101**

ISSUE FOR BID

\\andover\Projects\223811 Marlborough MA - Water Treat and Dist Upgrade\vip\Design Phase Drawings\Electrical\22381100-E101.dwg, Oct 17, 2014 - 3:29pm



MATCHLINE - FOR CONTINUATION SEE DWG E-208

- GENERAL NOTES:**
- ALL ELECTRICAL ITEMS SHOWN WITH BOLD DESIGNATION SHALL BE CONSIDERED NEW; ALL ITEMS SHOWN WITH LIGHT DESIGNATION SHALL BE CONSIDERED EXISTING.
  - REFERENCE RISER DIAGRAM ON SHEET E-401 FOR INSTRUMENTATION WIRING REQUIREMENTS.
- KEYED NOTES:**
- NEW MCC-1 WITH FILTERS AND INTERNAL VFDs. SEE SHEET E-020 FOR WIRING REQUIREMENTS.
  - CONNECT ROOF EXHAUST FAN F-2 TO MULTI-SPEED SWITCH PER MANUFACTURER'S RECOMMENDATIONS. INTERLOCK WITH T-STAT AND MOTORIZED DAMPER SHOWN. REFERENCE SHEET E-602 FOR GENERAL WIRING REQUIREMENTS.
  - CONNECT ROOF EXHAUST FAN F-3 TO MULTI-SPEED SWITCH PER MANUFACTURER'S RECOMMENDATIONS. REFERENCE SHEET E-602 FOR GENERAL WIRING REQUIREMENTS.
  - PROVIDE AN EATON DIGITAL POWER MONITOR IN "POWER XPERT METER 6000", PROVIDE WITH APPROPRIATE CT'S/PT'S FOR MONITORING LOAD SIDE OF MAIN BREAKER IN SWITCHBOARD PER MANUFACTURER'S REQUIREMENTS. MOUNT ON WALL ADJACENT TO EXISTING SWITCH BOARD. COORDINATE WITH ENGINEER AND MILHAM WATER PLANT FOR ANY POWER OUTAGE REQUIRED WHEN INSTALLING OT/PT MEASURING DEVICES.
  - SEE SHEET E-603 FOR TRANSFER PUMP MOTOR STARTER WIRING DIAGRAM AND CONTROL STATION WIRING DIAGRAM.
  - EXTEND AND RECONNECT EXISTING CONDUIT AND CABLE TO NEW VALVES - REFERENCE SHEET E-208 FOR ASSOCIATED FILTER CONTROL PANEL LOCATION.
  - CONNECT NEW EXHAUST FANS TO LOCAL RECEPTACLE CIRCUIT.

40 Shattuck Road, Suite 110  
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**WOODARD & CURRAN**

COMMITMENT & INTEGRITY DRIVE RESULTS

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NO.	DATE	DESCRIPTION	BY	CHECKED BY
C	10/17/14	ADDENDUM #1		
B	10/17/14	ISSUE FOR BID		
A	6/20/14	FOR MASSDEP REVIEW		
REV				

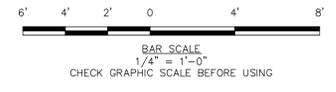
DESIGNED BY: GW  
DRAWN BY: SJA  
CHECKED BY: GW  
ZBRI00-EDWIM

**MAIN FLOOR  
ELECTRICAL PLAN 1**

DEPARTMENT OF PUBLIC WORKS  
MARLBOROUGH, MASSACHUSETTS

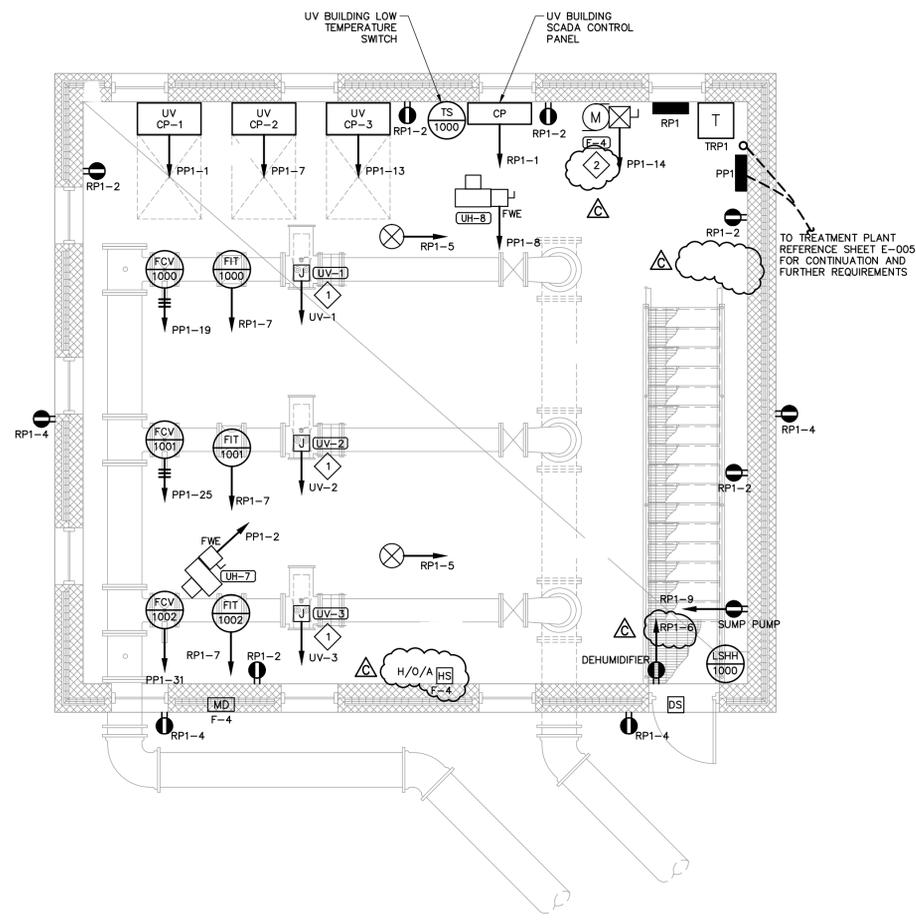
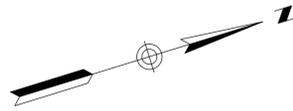
MILLHAM WATER TREATMENT PLANT  
UPGRADES

JOB NO.: 223811.01  
DATE: OCTOBER 2014  
SCALE: AS NOTED  
SHEET: 53 OF 71

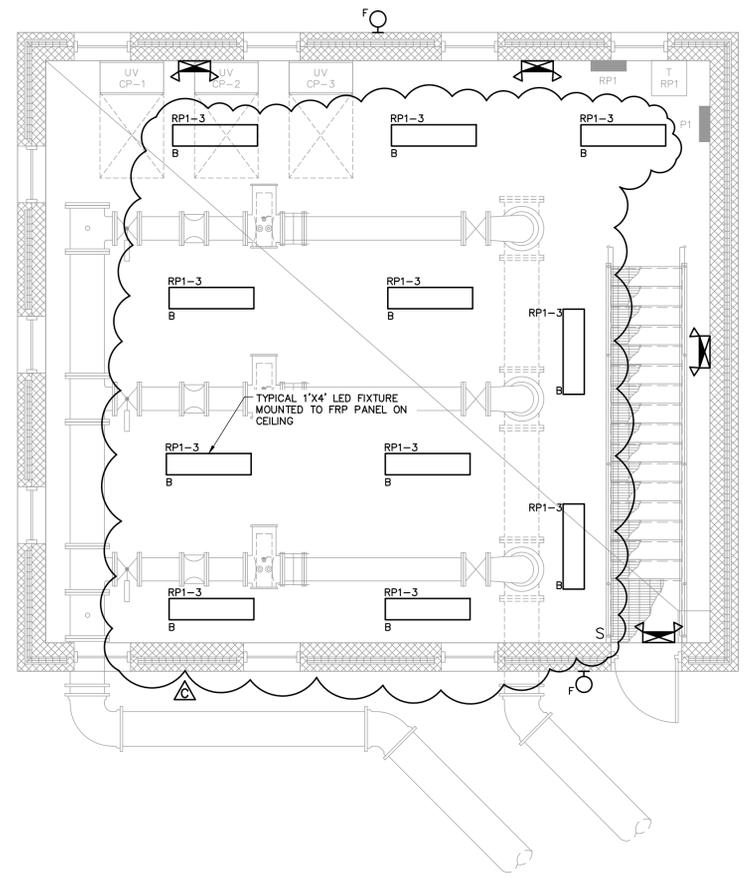


ISSUE FOR BID

E-206



**POWER & CONTROLS PLAN**  
SCALE: 1/4" = 1'-0"



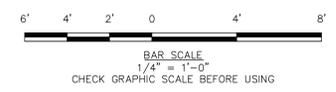
**LIGHTING PLAN**  
SCALE: 1/4" = 1'-0"

**GENERAL NOTES:**

- ALL ELECTRICAL ITEMS SHOWN WITH BOLD DESIGNATION SHALL BE CONSIDERED NEW; ALL ITEMS SHOWN WITH LIGHT DESIGNATION SHALL BE CONSIDERED EXISTING.
- REFERENCE ONE-LINE DIAGRAM ON SHEET E-011 FOR FURTHER ELECTRICAL REQUIREMENTS.
- REFERENCE RISER DIAGRAM ON SHEET E-501 FOR INSTRUMENTATION WIRING REQUIREMENTS.
- REFERENCE VFD WIRING DIAGRAM ON SHEET E-701 FOR VFD WIRING REQUIREMENTS.
- EQUIPMENT SHOWN ON THIS SHEET FOR DIAGRAMMATICAL PURPOSES ONLY. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS WITH ENGINEER & OTHER DISCIPLINES IN THE FIELD.
- REFERENCE HVAC DRAWINGS FOR THERMOSTAT LOCATIONS.

**KEYED NOTES:**

- HOMERUN SHALL BE WITH (4) #10, (1) #10G, 3/4" CONDUIT
- PROVIDE WALL-MOUNTED COMBINATION STARTER TO SERVE NEW ROOF EXHAUST FAN 'F-4'. INTERLOCK WITH MOTORIZED DAMPER SHOWN. REFERENCE HVAC PLANS FOR THERMOSTAT LOCATIONS. REFERENCE SHEET SHEET E-602 FOR WIRING REQUIREMENTS.



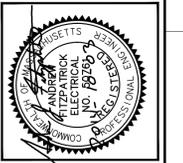
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40 Shattuck Road, Suite 110  
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866.702.6371 | www.woodardcurran.com

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NO.	DATE	DESCRIPTION	CHECKED BY: GW	DATE
C	10/17/14	ADDENDUM #1	ZBORON-EDM	
B	10/17/14	ISSUE FOR BID		
A	6/20/14	FOR MASSBEP REVIEW		
REV				

DESIGNED BY: GW  
DRAWN BY: SPA

**UV BUILDING ELECTRICAL PLANS**

DEPARTMENT OF PUBLIC WORKS  
MARLBOROUGH, MASSACHUSETTS

MILLHAM WATER TREATMENT PLANT  
UPGRADES

JOB NO.: 223811.01
DATE: OCTOBER 2014
SCALE: AS NOTED
SHEET: 64 OF 71

**E-301**

\\andover\Projects\223811 Marlborough MA - Water Treat and Dist Upgrade\vip\Design Phase\Drawings\Electrical\22381100-E-301.dwg, Oct 17, 2014 - 3:29pm

DIRECTORY	BRKR	POLE	CKT#	KVA	KVA LOADS			KVA	CKT#	POLE	BRKR	DIRECTORY
					A	B	C					
UV CP-1	30	3	1	5.33	7.83		2.50	2			15	UH-7
			3	5.33	7.83	2.50	4					
			5	5.33	7.83	2.50	6					
UV CP-2	30	3	7	5.33	7.83		2.50	8			15	UH-8
			9	5.33	7.83	2.50	10					
			11	5.33	7.83	2.50	12					
UV CP-3	30	3	13	5.33	5.62		0.29	14			15	F-4
			15	5.33	5.62	0.29	16					
			17	5.33	5.62	0.29	18					
FCV-1000	15	3	19	0.29	0.29			20			15	SPARE
			21	0.29	0.29		22					
			23	0.29	0.29		24					
FCV-1001	15	3	25	0.29	0.29			26			20	SPARE
			27	0.29	0.29		28					
			29	0.29	0.29		30					
FCV-1002	15	3	31	0.29	0.29			32			20	SPARE
			33	0.29	0.29		34					
			35	0.29	0.29		36					
SPACE				37	0.00			38			SPACE	
SPACE				39	0.00			40			SPACE	
SPACE				41		0.00		42			SPACE	
SPACE				43	0.00			44			SPACE	
SPACE				45		0.00		46			SPACE	
SPACE				47		0.00		48			SPACE	
RP1	60	3	49	1.88	1.88			50				SPACE
			51	2.83	2.83		52					SPACE
			53	1.76	1.76		54					SPACE
SUBTOTAL				24.04	24.99	23.92	SUBTOTAL					
VOLTAGE:		277/480	TOTAL KVA		72.94	PANEL NAME:		PP1				
MAIN BREAKER:		200	TOTAL AMPS		88	LOCATION:		UV BLDG				
BUSES:		250	MOUNTING:		SURFACE	AIC RATING:		42 KAIC				
PH & WIRES:		3PH 4W	NOTES:									

DIRECTORY	BRKR	POLE	CKT#	KVA	KVA LOADS			KVA	CKT#	POLE	BRKR	DIRECTORY
					A	B	C					
UV BUILDING SCADA CP	20	1	1	0.50	1.58		1.08	2	1	20		INT. RECEPTACLES - GENERAL USE
LIGHTING	20	1	3	0.93	1.65		0.72	4	1	20		EXT. RECEPTACLES - GENERAL USE
SMOKE ALARMS	15	1	5	0.10		1.54	1.44	6	1	20		DEHUMIDIFIER
FLOW TRANSMITTERS	15	1	7	0.30	0.30			8	1	20		SPARE
SUMP PUMP	25	1	9	1.18	1.18			10	1	20		SPARE
SPARE	20	1	11			0.00		12	1	20		SPARE
SPARE	20	1	13		0.00			14	1	20		SPARE
SPARE	20	1	15		0.00			16	1	20		SPARE
SPARE	20	1	17			0.00		18	1	20		SPARE
SPARE	15	1	19		0.00			20	1	15		SPARE
SPARE	15	1	21		0.00			22	1	15		SPARE
SPACE			23			0.00		24				SPACE
SPACE			25		0.00			26				SPACE
SPACE			27			0.00		28				SPACE
SPACE			29			0.00		30				SPACE
SUBTOTAL				1.88	2.83	1.54	SUBTOTAL					
VOLTAGE:		120/208	TOTAL KVA		6.25	PANEL NAME:		RP1				
MAIN BREAKER:		100	TOTAL AMPS		17	LOCATION:		UV BLDG				
BUSES:		100	MOUNTING:		SURFACE	AIC RATING:		42 KAIC				
PH & WIRES:		3PH 4W	NOTES:									

DIRECTORY	BRKR	POLE	CKT#	KVA	KVA LOADS			KVA	CKT#	POLE	BRKR	DIRECTORY
					A	B	C					
WEBR GATE OPERATOR #1	20	3	1	2.50	4.10		1.60	2			20	VACUUM PRIMING SYSTEM CP
			3	2.50	4.10	1.60	4					
			5	2.50	4.10	1.60	6					
WEBR GATE OPERATOR #2	20	3	7	2.50	14.08		11.58	8			100	PANEL B2
			9	2.50	15.90		13.40	10				
			11	2.50	15.40		12.90	12				
SPARE	15	3	13	0.00				14			20	SPARE
			15		0.00			16				
			17		0.00			18				
SPARE	20	3	19	0.00				20			20	SPARE
			21		0.00			22				
			23		0.00			24				
SPACE			25	0.00			26			20	SPARE	
SPACE			27		0.00		28				SPACE	
SPACE			29		0.00		30				SPACE	
SPACE			31	0.00			32				SPACE	
SPACE			33		0.00		34				SPACE	
SPACE			35		0.00		36				SPACE	
SPACE			37	0.00			38				SPACE	
SPACE			39		0.00		40				SPACE	
SPACE			41		0.00		42				SPACE	
SUBTOTAL				18.18	20.00	19.50	SUBTOTAL					
VOLTAGE:		480	TOTAL KVA		57.67	PANEL NAME:		B1				
MAIN BREAKER:		200	TOTAL AMPS		160	LOCATION:		BASEMENT				
BUSES:		200	MOUNTING:		SURFACE	AIC RATING:		22 KAIC				
PH & WIRES:		3PH 3W	NOTES:									

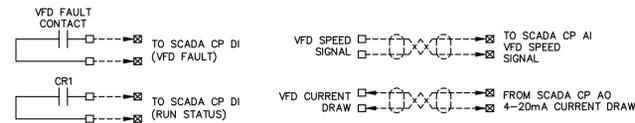
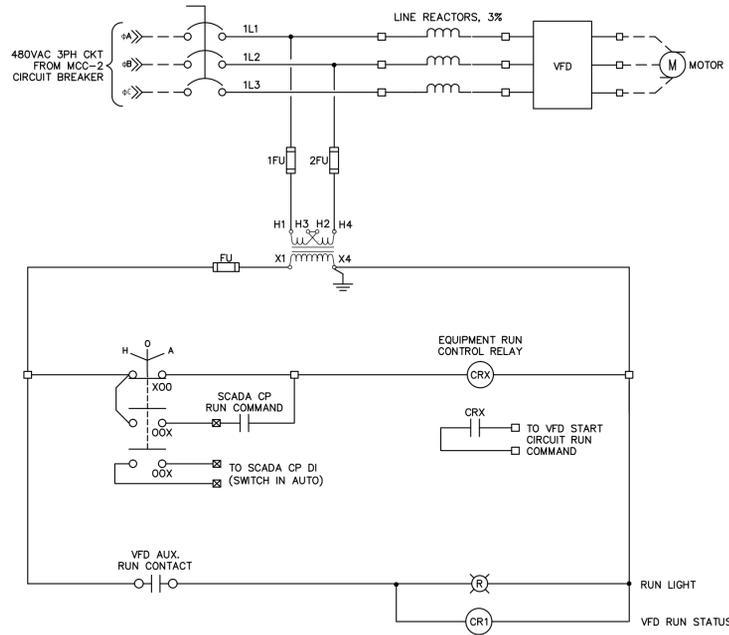
PANEL SCHEDULES  
SCALE: NO SCALE

LIGHTING FIXTURE SCHEDULE										
ALL FIXTURES SHALL BE FURNISHED COMPLETE WITH ALL HARDWARE, LAMPS, HANGERS, FITTINGS, ETC., FOR A COMPLETE AND PROPER INSTALLATION.										
TYPE	MANUFACTURER	CATALOG NUMBER	LAMP TYPE	LAMP WATT	LAMP NO.	VOLTAGE	MTG.	BALLAST FACTOR	REMARKS/RECOMMENDATIONS	
A	PHILIPS DAY-BRITE	2LG30L840-2-D-UNV	LED	30	3	120/277	-	NA	MATCH HEIGHTS OF EXISTING FIXTURES AND USE EXISTING PENDANTS AND MOUNTING LOCATIONS, UNLESS OTHERWISE NOTED.	
A1	PHILIPS DAY-BRITE	2LG30L840-2-D-UNV-DIM	LED	30	3	120/277	-	NA	MATCH HEIGHTS OF EXISTING FIXTURES, USE EXISTING PENDANTS AND MOUNTING LOCATIONS, UNLESS OTHERWISE NOTED. DIMMER SWITCHES SHALL BE COMPATIBLE WITH DIMMING FIXTURES.	
B	PHILIPS DAY-BRITE	DWAES1840-4-UNV	LED	47	30 LED	120/277	-	NA	MATCH HEIGHTS OF EXISTING FIXTURES, USE EXISTING PENDANTS AND MOUNTING LOCATIONS, UNLESS OTHERWISE NOTED.	
C	PHILIPS LIGHTOLIER	SF4C38A40UMB-US	LED	53	30 LED	120/277	-	NA	MATCH EXISTING HEIGHT OF STAIRWELL FIXTURE.	
D	PHILIPS STONDO	DWAES1840-4-UNV	LED	67	30 LED	120/277	-	NA	MATCH HEIGHTS OF EXISTING FIXTURES, USE EXISTING PENDANTS AND MOUNTING LOCATIONS, UNLESS OTHERWISE NOTED.	
F	PHILIPS STONDO	LP16T PCB-1	LED	40	30 LED	120/277	-	NA	MATCH HEIGHTS OF EXISTING FIXTURES.	
G	PHILIPS STONDO	LP32T PCB-1	LED	71	30 LED	120/277	-	NA	MATCH HEIGHTS OF EXISTING FIXTURES.	
	PHILIPS CHLORIDE	CCTLR3W		5.4	LED	120/277	-	NA	MATCH HEIGHTS OF EXISTING FIXTURES.	

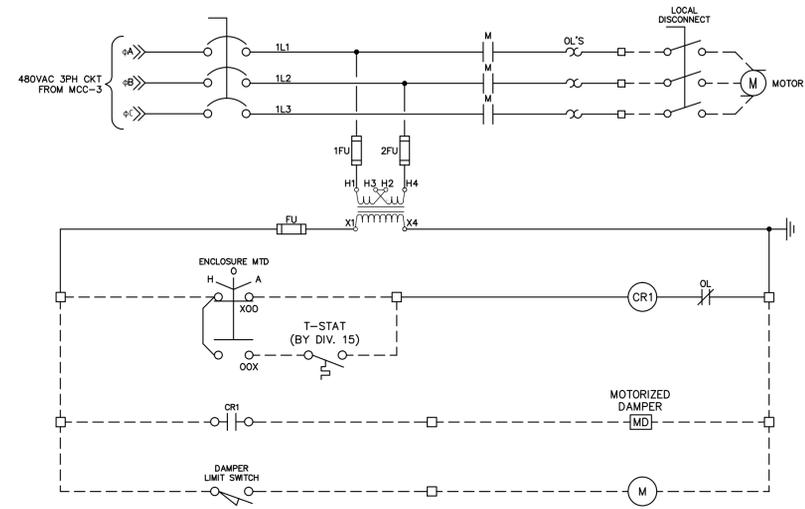
LIGHTING FIXTURE SCHEDULE  
SCALE: NO SCALE

DIRECTORY	BRKR	POLE	CKT#	KVA	KVA LOADS			KVA	CKT#	POLE	BRKR	DIRECTORY
					A	B	C					
SODIUM HYDROXIDE FEED PUMP #1	15	3	1	0.30	0.30			2	1	20		SPARE
			3	0.30	0.30		4	1	20		SPARE	
			5	0.30		0.50	0.20	6	1	15		AIT-7001, 7002
FLOURINER ROOF EXHAUST FAN	15	1	7	0.70	0.80		0.10	8	1	15		FT-7000, PIT 7000
			9	0.70	0.80		0.10	10	1	15		FT-6001
PLANT CHEMICAL FEED CP	20	1	11			0.10	0.10	12	1	20		SPARE
			13	0.30	0.40		0.10	14	1	15		FT 2000
SODIUM HYDROXIDE FEED PUMP #2	15	3	15	0.30	2.22		1.92	16	1	40		DUST COLLECTOR #1
			17	0.30	2.22	1.92	18	1	40		DUST COLLECTOR #2	
SODIUM HYDROXIDE FEED PUMP #3	15	3	19	0.30	0.30			20	1	20		SPARE
			21	0.30	0.30			22	1	20		SPARE
PERMANGANATE TRANSFER 1 HP PUMP	15	3	23	0.30	0.30			24	1	20		SPARE
			25	0.60	1.80		1.20	26				
SODA ASH DRY FEED CP #1	20	3	27	0.60	1.80		1.20	28				PANEL B2A
			29	0.60	1.80		1.20	30				
SECURITY GATE	20	3	31	1.60	3.20		1.60	32				SODA ASH DRY FEED CP #2
			33	1.60	3.20		1.60	34				
SODIUM HYDROXIDE TRANSFER PUMP	15	3	35	1.60	3.20		1.60	36				SODA ASH FEED PUMP #1
			37	0.70	1.66		0.96	38				
ALUM TRANSFER PUMP	15	3	39	0.70	1.66		0.96	40				SODA ASH FEED PUMP #2
			41	0.70	1.66		0.96	42				
SODIUM HYDROXIDE TRANSFER PUMP	15	3	43	0.60	1.56		0.96	44				SODA ASH FEED PUMP #3
			45	0.60	1.56		0.96	46				
ALUM TRANSFER PUMP	15	3	47	0.60	1.56		0.96	48				SPARE
			49	0.60	1.56		0.96	50				
SODIUM HYDROXIDE TRANSFER PUMP	15	3	51	0.60	1.56		0.96	52				SPARE
			53	0.60	1.56		0.96	54				
SUBTOTAL				11.58	13.40	12.90	SUBTOTAL					
VOLTAGE:		120/208	TOTAL KVA		37.87	PANEL NAME:		B2				
MAIN BREAKER:		150	TOTAL AMPS		105	LOCATION:		BASEMENT				
BUSES:		200	MOUNTING:		SURFACE	AIC RATING:		22 KAIC				
PH & WIRES:		3PH 4W	NOTES:									

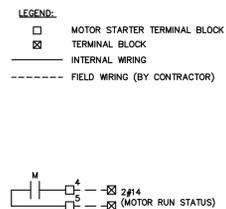
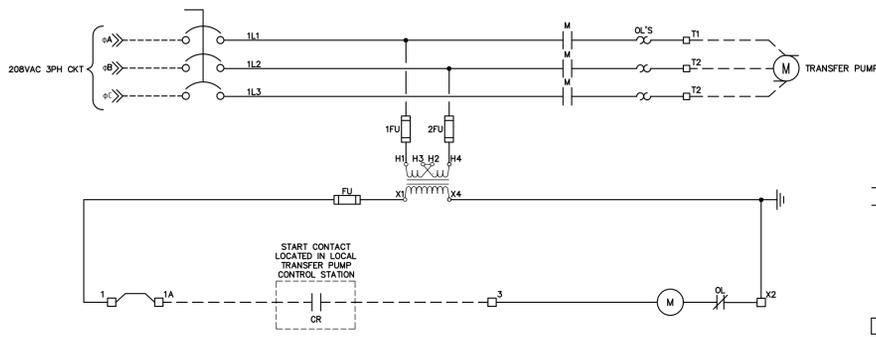
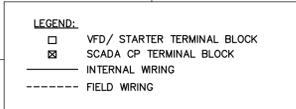
DIRECTORY	BRKR	POLE	CKT#	KVA	KVA LOADS			KVA	CKT#	POLE	BRKR	DIRECTORY
					A	B	C					
PERMANGANATE FEED PUMP #1	15	3	1	0.30	0.30			2	1	20		SPARE
			3	0.30	0.30		4	1	20		SPARE	
			5	0.30	0.30		6	1	20		SPARE	
PERMANGANATE FEED P												



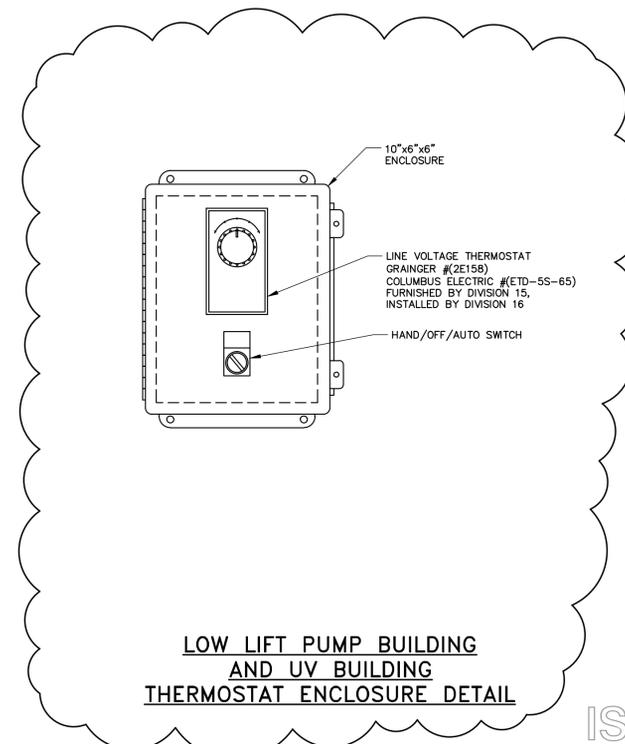
**SPENT WASHWATER PUMP NO.2  
VFD WIRING DIAGRAM**



**LOW LIFT PUMP BUILDING  
EXHAUST FAN 'EF-3'  
MOTOR STARTER WIRING DIAGRAM**



**TRANSFER PUMP MOTOR STARTER  
WIRING DIAGRAM**



**LOW LIFT PUMP BUILDING  
AND UV BUILDING  
THERMOSTAT ENCLOSURE DETAIL**

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1	10/17/14	DESIGN FOR BID	GW	SPA
2	10/17/14	FOR MASSBEP REVIEW	GW	SPA
3	6/29/14	REVISION	GW	SPA

DESIGNED BY: GW  
CHECKED BY: GW  
DRAWN BY: SPA  
Z28100-EGZIMC

**WIRING DIAGRAM**

DEPARTMENT OF PUBLIC WORKS  
MARLBOROUGH, MASSACHUSETTS

MILLHAM WATER TREATMENT PLANT  
UPGRADES

JOB NO.: 223811.01  
DATE: OCTOBER 2014  
SCALE: AS NOTED  
SHEET: 66 OF 71

**E-602**

ISSUE FOR BID

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