MEMORANDUM

Date: May 20, 2014

To: The Honorable Chair and Members
Pima County Board of Supervisors

From: C.H. Huckelberry
County Administrator

Re: **The University of Arizona West Lab Expansion Lease, Operation and Maintenance Costs**

Supervisory District One staff requested additional information regarding the Operation and Maintenance (O&M) costs associated with the attached lease agreement between Pima County and the Arizona Board of Regents. Pages 54 through 56 of this lease agreement provide the estimated O&M costs for this facility, which were developed by our consultant in an August 2012 study.

The attached May 15, 2014 O&M Calculation provides the calculation of the estimated annual expense of $6.91 per square foot, or $148,266, that was incorporated into the property lease. Please note that the negotiated tenant share of the annual O&M cost for this facility to be recovered through lease payments are $7.23 per square foot, or $155,120.

Please contact Michael Kirk, our Facilities Management Director, if you have any additional questions related to this lease.

CHH/mjk

Attachments

c: John Bernal, Deputy County Administrator for Public Works
Jackson Jenkins, Director, Regional Wastewater Reclamation
Michael Kirk, Director, Facilities Management

PIMA COUNTY
FACILITIES MANAGEMENT
150 WEST CONGRESS, 3rd FLOOR
TUCSON, ARIZONA 85701

MICHAEL L. KIRK, FMP

PH: (520) 724-3703 * FAX: (520) 724-3900

May 15, 2014

RE: RWRD & UA Lease Agreement
UA lab expansion O&M calculation

The following is a breakdown of expenses and lease agreement calculations for the UA proportionate share of the Aqua Nueva Lab a facility owned and operated by Pima County Regional Wastewater Reclamation Department

Building address (lease p1, A.)	3035 W. El Camino del Cerro	
Leasable area (lease p2, 1)	21,455 square feet	
O&M cost initial year:	$145,216 annual O&M/21,455sf	= $6.77/sf annual
Insurance (lease p94)	$5M/100 x 0.0610 = $3,050/21,455sf	= $0.14/sf annual
(0.0610 per $100 of combined building & content value est. $5M)		
Total O&M plus Insurance annual		= $6.91/sf
TOTAL ANNUAL EXPENSE (w/o overhead)	$6.91/sf x 21,455sf	= $148,266
O&M 5 year lease total	$145,216 annual x 5 years	= $726,080

Lease Payments (lease p6, 6), c)Tenant's Proportionate Share of Operating Expenses is currently estimated to be approximately $7.23 per rentable square foot per year.

Payment of Tenant's Share (lease p6, 6), c)	$7.23/sf x 21,455sf	= $155,119.65/year
Lease Term (5 yrs) estimated total	$155,119.65/yr. x 5 years	= $775,598.25

Lease Reconciliation/Audit (lease p6, 6), d) Within ninety (90) days after the end of each fiscal year (July 1 to June 30) Landlord will give to Tenant a reasonably detailed itemized statement reconciling estimated Operating Expenses paid with actual Operating Expenses during the fiscal year just ended.

MEMORANDUM

Date: April 4, 2014

To: The Honorable Chair and Members
Pima County Board of Supervisors

From: C.H. Huckelberry
County Administrator

Re: **April 1, 2014 Consent Agenda, Item 9: Award of Construction Contract to W.E O'Neil Construction Company, Inc.**

At the April 1, 2014 Board of Supervisors meeting where this contract was awarded, a question arose regarding the lease of premises to The University of Arizona and a request was made to not award this construction contract until the lease had been reviewed.

Attached is a copy of the lease approved by the Board in November 2012 for this building. As you will see from the lease, the use is an expanded water resource laboratory by The University of Arizona and is for a period not to exceed 10 years; at which time it is anticipated the County will expand into the facility. The purpose of co-locating The University of Arizona at this facility is to enhance water-based research activities associated with The University of Arizona and the Environmental Research Laboratory. Water and its reuse will be one of the more important research activities for our future in the arid Southwest. We actively participate with The University of Arizona in this research for the benefit of our residents.

The lease defines all of the required cost sharing, tenant improvement costs to be paid by The University of Arizona and the payment of operating expenses.

If the Board has any question regarding this lease or support of the recent contract award to expand the County's water quality laboratory, please contact me.

CHH/anc

Attachment

c: John Bernal, Deputy County Administrator for Public Works
Jackson Jenkins, Director, Regional Wastewater Reclamation

BOARD OF SUPERVISORS AGENDA ITEM SUMMARY

Requested Board Meeting Date: April 1, 2014

ITEM SUMMARY, JUSTIFICATION and/or SPECIAL CONSIDERATIONS:

Low Bid: Award of Contract, Requisition No. 127533 in the amount of $4,155,366.00 to the lowest responsive bidder, W.E. O'Neil Construction Company, Inc. (Headquarters: Tucson, AZ) for the Total Bid for the construction of the Pima County Regional Wastewater Reclamation Department Laboratory Addition. The Contract is for fifteen months and may be extended for project completion. Funding Source: Regional Wastewater Reclamation Department Obligations. Administering Department: Facilities Management.

The recommended contractor's Small Business Enterprise (SBE) subcontractor utilization meets the SBE goal of ten percent (10.00%) established for this project.

Number of Responses: 8

Tabulation Solicitation #127533 Pima County Regional Wastewater Reclamation Department Laboratory Addition

RECOMMENDED FIRM	Total Base Bid	Alternate 1: Expanded parking	Total Bid
W.E. O'Neil, Construction Company, Inc.	$4,129,452.00	$25,914.00	$4,155,366.00
Other Participating Firms			
Camwest Group, Inc.	$4,462,680.00[1]	$42,781.00	$4,505,461.00
Lang Wyatt Construction	$4,712,838.00	$21,000.00	$4,733,838.00
DL Withers Construction, LC	$4,784,220.00[2]	$32,000.00	$4,816,220.00
FCI Constructors, Inc.	$4,857,545.00	$28,000.00	$4,885,545.00
BFL Construction Co., Inc.	$5,016,988.00[3]	$26,434.00	$5,043,422.00
Concord General Contracting, Inc.	$5,051,650.00	$28,000.00	$5,079,650.00
Hickam Construction Company	$5,322,357.00	$40,250.00	$5,362,607.00

[1] Camwest: Scrivener's error Line 2 extended amount of $28,938.80 submitted, correct extended amount based on unit price is $28,930.00

[2] D.L Withers: Scrivener's error Line 2 extended amount of $28,375.00 submitted, correct extended amount based on unit price is $24,970.00

[3] BFL: Scrivener's error Line 1 extended amount of $9,686.00 submitted, correct extended amount based on unit price is $9,675.00. Scrivener's error Line 2 extended amount of $21,440.00 submitted, correct extended amount based on unit price is $21,450.00

Cost Estimate: $5,437,600.00 (including alternate)

Contracts Officer: Melissa Hala'ufia, 724-8586
Procurement Department

CLERK OF BOARD USE ONLY: BOS MTG. _____

ITEM NO. _____

PIMA COUNTY DEPT. OF: **FACILTIES MANAGEMENT** **PROJECT: UA ROMP Wastewater Lab** **TENANT: Arizona Board of Regents for and on behalf of The University of Arizona** **EXPENSE & REVENUE CONTRACT** **REVENUE AMOUNT: $ 775,598.25** **EXPENSE AMOUNT: $ 726,080.00** **TERM: Five (5) Years**	CONTRACT NO CT. WW-13000000000000004/06 AMENDMENT NO. _____ This number must appear on all invoices, correspondence and documents pertaining to this contract.

LEASE AGREEMENT

This Lease Agreement (this "Lease"), dated November 13, 2012 for reference purposes only, is made and entered into by and between the ARIZONA BOARD OF REGENTS, a body corporate and an agency of the State of Arizona, for and on behalf of The University of Arizona (hereinafter referred to as the "Tenant" or the "University") and PIMA COUNTY, a political subdivision of the State of Arizona (hereinafter referred to as the "County" or "Landlord").

RECITALS

A. County owns land and improvements, including a building, site utility infrastructure, site improvements including hardscape and landscaping, outdoor patios, and parking lots, with a street address of 3035 W. El Camino del Cerro in Tucson, Arizona (the "Building"). County operates a laboratory within the Building as part of its sewer and wastewater analytical treatment system.

B. County anticipates that it will, in the future, need an expanded laboratory in order to accommodate regulatory changes and treatment-system expansion. The Board of Supervisors has determined that it is in the best interests of the County to build that expanded laboratory (the "Addition"), which will be an extension of the Building, now and permit the University to use it until such time as the County has need of it.

C. The University wishes to combine certain of its off-campus Environmental Research Laboratory (ERL) programs with certain of its on-campus water and energy focused research initiatives with the intent to relocate these research initiatives to the Addition. These combined research initiates will focus on water use, renewable energy and future sustainability research in the areas of microbiology, real time water quality monitoring, point-of-use, network distribution and aquatic toxicology.

D. The Board of Supervisors of the County has determined that that public safety and economic benefits will flow from the increased presence of the University in the Building. Tenant's presence will facilitate synergy with the Landlord's existing laboratory to address advanced

potable water treatment and monitoring, waste water treatment and water reclamation and novel energy sources.

E. HDR Architecture, Inc., has prepared a report (the "Study") for the County entitled "Pima County Regional Wastewater Reclamation Department WEST Lab Expansion Study Submittal," dated August 24, 2012, a copy of which is attached to this Lease as Exhibit C. The Study contains a preliminary conceptual design for the Addition and, based on that design, an estimate of construction costs and an analysis of estimated operation and maintenance costs. This Study is a working document only; certain assumptions on which the Study was based have already changed, including the allocated square footages, and what items are included in operating expenses.

F. This Lease is being entered into pursuant to A.R.S. § 11-952..

AGREEMENT

1) LEASE/PREMISES. In consideration of the rent to be paid and all terms, conditions, covenants, and agreements contained in this Lease, Landlord hereby lets to Tenant and Tenant hereby leases from Landlord, approximately 21,455 sq. ft. in the Building, within the Addition to be designed and constructed by the County, as shown on the floor plan attached as Exhibit A (the "Premises"). Tenant will also have the right to utilize certain exterior areas associated with the Building in common with Landlord, including an exterior patio as well as an existing asphalt surface parking lot as shown on Exhibit B (the "Parking Lot"). This does not, however, include the exclusive use or occupancy of any outside areas, for storage or any other purpose.

2) TERM. The term of this Lease will commence on the Commencement Date as defined below, and will continue until the date that is five (5) years after the Commencement Date (the "Initial Term"). If Tenant is in material compliance with all terms and conditions of this Lease, Tenant shall have the right to extend the term for one (1) additional five (5) year period (the "Extension Term"). Tenant may exercise the extension option by sending written notice of its election to extend the term to Landlord not more than nine (9) nor less than six (6) months prior to the end of the Initial Term. The Initial Term, together with the Extension Term if exercised, as sooner terminated or further extended as provided herein shall be referred to herein as the "Term."

3) TERMINATION. Landlord may terminate this lease at any time after the Initial Term, with respect to all or a portion of the Premises, if Landlord determines that Landlord needs to utilize the space for its own purposes as a result of system expansion, new regulatory requirements, or other material changes in relevant circumstances that are not within Landlord's reasonable control. Landlord will give Tenant a minimum of one year written advance notice of any such termination.

4) TENANT IMPROVEMENTS; COMMENCEMENT DATE.

a) Tenant Improvements. Landlord will build out the Premises substantially as shown on the conceptual plan attached as Exhibit A, and those additional improvements described below, with the design criteria, finishes, elevations and mechanical systems described in the Study (the "Tenant Improvements"). Landlord will construct the Tenant Improvements in a good and workmanlike manner, according to specific plans and specifications to be developed by Landlord.

i) Tenant will cooperate with Landlord to determine, in a timely manner, the number of telephones and data connections to be installed in the Premises and make any other necessary decisions with respect to which Tenant's input is solicited by Landlord. Landlord will provide rough-in data and communication infrastructure, including installation of CAT 6A data cables. Tenant will be responsible for providing its own data and communications equipment, including server hardware and telephone equipment.

ii) Landlord will also install and connect to utilities certain fixed casework and equipment, itemized in Exhibit E attached to this Lease, being relocated by Tenant from other locations to the Premises. Tenant will provide this equipment in a timely manner so that it can be installed at the appropriate time as part of the construction, without resulting in any delays to construction.

iii) Landlord will provide site-entrance and building signage that identifies the presence and location of the Tenant and meets University standards with respect to size, text, color, material, and other University trademark and licensing requirements, provided that the signage must also comply with County standards. Landlord will not be required to spend more than $7,500 on signage for Tenant.

iv) Landlord may install a chlorinated-effluent pipe extension to the Addition, which Tenant may utilize for its research.

b) Construction Costs. Tenant will pay all costs associated with the portion of the Tenant Improvements, primarily interior build-out of the Premises, allocated to Tenant as shown on Exhibit A. This includes the data cable installation described in Paragraph a)i) above. Landlord will require its contractor to allocate construction costs between the Tenant's portion of the work and Landlord's, and will notify Tenant of the cost allocated to Tenant's portion after a contract amount is determined through the Landlord's procurement process. Tenant will be responsible for any increases in cost due to change orders involving Tenant's portion of the work, provided that Landlord will not approve change orders that will have the effect of increasing Tenant's cost above that in the construction contract without Tenant's prior approval, which will not be unreasonably withheld.

i) Tenant's portion of the construction cost is currently estimated to be $194,400. Tenant acknowledges that this is only an estimate and that actual costs may be more or less than this amount. Tenant also acknowledges that this estimate is based on the Study, and that any changes requested by Tenant from the conceptual design developed as part of the Study may increase Tenant's costs. Tenant and Landlord will cooperate during the process of developing final plans and specifications for the Tenant Improvements, in order to try to keep Tenant's construction costs at around this estimated amount.

ii) Tenant will also pay all costs associated with installation of Tenant's equipment as provided in Paragraph a)ii) and a)iii) above. If a chlorinated effluent line is installed and Tenant utilizes the line installed as described in Paragraph a)iv) above, Tenant will pay half the cost of this line.

iii) Tenant will pay these funds to Landlord upon substantial completion of the Tenant Improvements, and before Tenant will be permitted to occupy the Premises.

c) Move-In. Landlord will notify Tenant when the Tenant Improvements are substantially complete, subject only to minor "punch list" items, such that Tenant can begin moving into the Premises. The date of the substantial completion notice shall be the "Commencement Date." Landlord will also, in this notice, advise Tenant of the total rentable square footage of the Premises and the total amount due from Tenant for the construction, as set forth in (b) above. Tenant is responsible for moving its personal property (including furnishings, fixtures, and equipment) into the Premises, installing any fixtures as necessary, and bearing all expenses associated with move-in. Tenant will coordinate its move-in with Landlord so that any disruption to Landlord's operations is minimized as much as reasonably possible.

d) Additional Improvements or Alterations.

i) *Tenant Allowed Incidental Interior Laboratory Modifications.* Tenant may, at its own expenses, without prior approval from Landlord, reroute and change the secondary utility pathways required to serve Tenant's equipment, using Tenant's own Facility Management staff. This includes extending secondary electrical, data, water piping and other utilities from the Addition's building systems, and installing uni-strut supports for mounting light duty equipment. Tenant will nevertheless notify Landlord in advance regarding any such work to be done by Tenant. Landlord reserves the right to inspect such work.

ii) *Landlord's Approval Required.* Except as set forth above, Tenant may not make or cause to be made any alterations, additions, or improvements ("Alterations") to the Premises or to the Building, including any non-structural cosmetic changes, without first obtaining Landlord's written

approval, which will not be unreasonably withheld.

iii) *Plans, Specifications, Permits*. Tenant will present to Landlord plans and specifications for any Alteration requiring Landlord's approval, at the time Landlord's approval is sought. Landlord will notify Tenant, within thirty (30) business days after receipt of a set of plans, of any objections Landlord has to the plans. If Landlord does not respond, the plans will be deemed rejected.

iv) *Permits; Standards*. Tenant will obtain any building permits and other governmental approvals required under applicable laws or regulations for the work done by Tenant. Tenant will construct or install all Alterations at its own expense in a good and workmanlike manner, in compliance with all applicable codes and industry standards, with all work being performed by licensed contractors or Tenant's Facilities Management Department personnel, and in compliance with any plans approved by Landlord.

5) USE.

a) Permitted Uses: The Premises may be used by Tenant only for teaching/training, office space and laboratory analysis, research and testing of water, wastewater and other uses reasonably related thereto for the University of Arizona faculty, graduate students, and staff as described in the Recitals.

b) Prohibited Activities: Tenant will not permit any unlawful activities on the Premises, or any activities that unduly interfere with work of the Landlord's employees in the remainder of the Building. Tenant may not serve alcohol in the Premises at any time.

c) Hazardous Materials Prohibited: Clean Air Act. Tenant will not cause or permit any hazardous or toxic materials or substances to be brought upon, kept, or used in or about the Premises by Tenant, its agents, employees, contractors or invitees, without the prior written consent of Landlord, other than such hazardous or toxic materials or substances that are necessary or useful to Tenant's approved activities in the Premises, which Tenant must use, keep and store in a manner that complies with all laws regulating any such materials or substances. Tenant's operations on the Premises will comply with all applicable provisions of environmental laws and regulations, including the Clean Air Act, 42 U.S.C. 7401 et seq. and Arizona Revised Statutes, Title 49, Chapter 3. Tenant will remediate and clean up, at its sole cost and expense, any contamination of the Premises, the Building, or any surrounding area occurring during the term of this Lease to the extent caused by Tenant or its agents, employees, contractors or invitees.

d) Rules and regulations. Tenant and its employees, agents, contractors and invitees will abide by rules and regulations for the Premises, as they may be amended from time to time by Landlord, concerning, among other things, sanitation, handling of trash and debris, loading and unloading of trucks and other vehicles, safety and

security. Such rules and regulations shall not unduly limit or impair Tenant's permitted use of the Premises. The current rules are attached as Exhibit D.

6) OPERATING EXPENSES.

a) Calculation of Square Footage. Currently, the rentable square footage of the Premises is estimated to be 21,455. The actual square footage will be determined by Landlord at such point first during the final design and second at substantial completion of construction of the Tenant Improvements as the rentable square footage can be calculated with reasonable accuracy. Landlord will, in the notice of substantial completion described in Section 4c) above, inform Tenant of the final rentable square footage for purposes of the calculation of Operating Expenses, as provided below. Landlord's calculation of the square footage will be final, absent bad faith.

b) Operating Expenses. Tenant will pay no rent for the Premises, but will pay Tenant's Proportionate Share of all Operating Expenses for the Addition.

i) *"Tenant's Proportionate Share"* is the percentage calculated by dividing the total rentable area of the Premises (measured from the inside face of finished walls) by the total rentable area of the Addition Based on the Plans, Tenant's Proportionate Share is expected to be 96%. The actual percentage will be calculated by Landlord after completion of the Tenant Improvements.

ii) "Operating *Expenses"* means all of Landlord's direct costs of operation, repair and maintenance of the Addition, specifically including all services and utilities that Landlord is required to provide under Section 7) below. Operating Expenses include (but are not necessarily limited to) any applicable real estate taxes or special assessments; utilities (including electrical, water and sewer charges); security system operation and maintenance; termite and pest control; insurance premiums; and Landlord's direct and indirect labor costs for any work done by Landlord's own labor force.

c) *Payment of Tenant's Share.* Tenant will pay, on the Commencement Date, and on the first day of each month during the term of this Lease thereafter, Tenant's Proportionate Share of the estimated Operating Expenses for the next month. (If the first and last months are partial months, the amount will be prorated.) Landlord will advise Tenant from time to time of the amount of the monthly estimated Operating Expenses and Tenant's Proportionate Share of same, and Tenant will pay that amount on a monthly basis, without demand or offset, until such time as Landlord advises Tenant of any new estimate. Tenant's Proportionate Share of Operating Expenses is currently estimated to be approximately $7.23 per rentable square foot per year.

d) *Reconciliation/Audit.* Within ninety (90) days after the end of each fiscal year (July 1 to June 30) Landlord will give to Tenant a reasonably detailed itemized statement reconciling estimated Operating Expenses paid with actual Operating Expenses

during the fiscal year just ended. In addition, Tenant will be entitled, at any time, to inspect or audit, at Tenant's expense, Landlord's books and records in order to verify the amount of Operating Expenses for which Tenant is responsible. If such a reconciliation or audit reveals that Tenant has underpaid, Tenant will pay any additional amounts due within thirty (30) days of receipt of the statement or completion of the audit; if Tenant has overpaid, Tenant will receive a credit in the amount of the overpayment against subsequent Operating Expense payments due hereunder.

7) LANDLORD'S RESPONSIBILTIES.

a) Repairs. Subject to Section 14) concerning damage resulting from a casualty during the Term, Landlord will make all repairs in and to the Building and Premises, except as provided in Section 8) below. Landlord's repairs will include the roof, facade, structural portions of the Building, all major Building systems such as HVAC systems (including air conditioning and evaporative coolers), major plumbing requirements (in-wall plumbing and domestic water), and in-wall electrical connections other than those necessary for operation of Tenant's computer or office equipment. Landlord is not responsible for maintenance and/or repair of Tenant's installed equipment or systems.

b) Maintenance. Except as set forth in Section 8) below, Landlord will perform all routine and periodic maintenance of the Building, annual fire alarm maintenance, certification and maintenance of a back flow preventer valve installed in the water line going into the Building, service associated with usage of the air conditioning compressor and equipment, and building keyless access and security systems.

c) Utilities. Landlord will obtain water, sewer, electricity and gas for the Building. Landlord will provide Tenant with internet service at no charge pursuant to a separate network sharing agreement between the parties.

d) Notification/Cure by Tenant. In the event of a breakdown or needed repairs for which Landlord is responsible, Tenant will notify Landlord or its agent of such breakdowns or needed repairs, and Landlord will cause such repairs and/or replacements as are necessary to correct such condition to be done within a reasonable period of time. Except that, in the event of a breakdown in the heating or air-conditioning systems or of any condition requiring repairs of an emergency or life safety nature, the period shall instead be limited to one (1) business day. Tenant will have the right to make any repairs that are the responsibility of Landlord that Landlord fails to make in a timely manner as set forth above, and Landlord will reimburse Tenant for the reasonable cost of such repairs.

e) Security. Landlord will provide all security systems for the Building.

~~f)~~ Termite Control. Landlord will provide termite control services for the Building or as reasonably necessary for protection of the Premises.

g) Insurance. Landlord will be responsible for fire and other real property insurance for the Building (not personal property), and may self-insure for such losses.

8) TENANT'S RESPONSIBILITIES:

a) Cleaning & Interior Maintenance. Tenant will provide and pay for janitorial supplies and services to the Premises.

b) Furnishings. Tenant is responsible for the purchase, operation, maintenance, repair and replacement of any installed furnishings, devices, systems, equipment and software in the Premises. Tenant is responsible for any fire extinguishing or safety equipment necessary for the safe operation of scientific equipment and supplies that will be used in the Premises. Unless otherwise mutually agreed upon, Tenant will, at its expense, contract with a licensed contractor or with Tenant's Facilities Management Department, to remove from the Premises all furnishings, fixtures, and equipment installed in the Premises by the Tenant at the expiration or termination of this Lease, and will repair any damage caused by such removal to Landlord's satisfaction so the Premises are left in "usable" condition.

c) Tenant Damage. Tenant will, with Landlord's approval, promptly repair, at Tenant's expense, any damage done to the Premises, the Building, or the exterior areas, caused by any employee, student, volunteer, agent, contractor or invitee of Tenant. This specifically includes any damage done to the parking lot or driveways by trucks serving Tenant's operations.

d) Access to the Premises. Tenant will permit Landlord and Landlord's authorized representatives to enter the Premises at times reasonably convenient to Tenant and Landlord for purposes of inspection, making any repairs and performing any work therein as may be necessary for Landlord to comply with its repair obligations. Landlord, in the performance of any such work, will cause as little inconvenience, annoyance, disturbance, or damage to Tenant as is reasonably possible under the circumstances.

e) Sustainability Plan. The Tenant highly values sustainability in all of its endeavors and operations and therefore will use all reasonable efforts to use recycled products for its operations in the Premises, or re-use and recycle materials utilized in the Premises.

f) Telephone/Internet Charges. Tenant is responsible for obtaining and paying for its own telephone service if it chooses to have such a service; currently, Tenant plans to use VOIP.

g) Taxes. Tenant is responsible for all applicable taxes related to this Lease and will pay to Landlord, in addition to any other sums due hereunder, any applicable rental taxes for which Landlord is responsible including, if applicable, the government property lease excise tax pursuant to A.R.S. § 42-6201 et seq.

h) Insurance. Tenant is responsible for insuring its personal property and equipment brought to the Premises. Tenant will provide proof of commercial general liability insurance or its equivalent in the amount of $2,000,000 each occurrence in addition to worker's compensation. Landlord acknowledges that it has been informed that Tenant is a participant in the State of Arizona Department of Administration's insurance program under A.R.S. § 41-621 and that coverage under said program shall be sufficient and acceptable to fulfill the Tenant's liability insurance obligation under this lease.

9) CAPITAL REPAIRS. Tenant will contribute towards the cost of replacing or repairing the air conditioner(s), evaporative coolers(s), roof and any other capital building equipment serving the Addition (whether or not such equipment also serves other portions of the Building) that are needed during the term of this Lease that are not covered by the warranty that Landlord will get from its contractor in connection with the initial construction of the Addition, and are not caused by the negligence or willful misconduct of Landlord's employees or invitees. Tenant's contribution will be in the amount of Tenant's Proportionate Share of the cost except that, with respect to any equipment or system serving the entire Building rather than just the Addition, Tenant's share of the cost will be a determined by dividing the total rentable area of the Premises by the total rentable area of the entire Building.

10) DEFAULT.

a) Tenant Default. The occurrence of any one or more of the following events will constitute a default and breach of this Lease by Tenant for which Landlord may terminate this Lease:

i) *Non-use of Premises.* The vacating or abandonment of the Premises, or cessation of activities thereon, by Tenant for a period of three (3) consecutive months, where such abandonment continues for a period of ten (10) calendar days after notice of such default is sent by Landlord to Tenant.

ii) *Monetary Obligations.* The failure by Tenant to make any payment required to be made by Tenant hereunder, as and when due, where such failure continues for a period of ten (10) calendar days after notice from Landlord that such payment is due.

iii) *Violation of Law.* Violation of any law by Tenant, or the conduct of any unlawful activities on the Premises that are permitted by Tenant, either tacitly or explicitly, or which Tenant has not taken reasonable means to prevent after Tenant becomes or in the exercise of reasonable diligence should have become aware that such activities are being conducted.

iv) *Health and Safety Violation.* Any action or omission by Tenant that, in the Landlord's reasonable judgment, causes a material threat to the health or safety of the general public or the users of the Building.

v) *Other Covenants*. The failure by Tenant to observe or perform any other of the covenants, conditions or provisions of this Lease to be observed or performed by Tenant, where such failure continues for a period of thirty (30) days after written notice thereof by Landlord to Tenant; provided, however, that if the nature of Tenant's default is such that more than thirty (30) days are reasonably required for its cure, then Tenant will not be deemed to be in default if Tenant commences such cure within said thirty (30) day period and thereafter diligently prosecutes such cure to completion provided such cure is completed within one hundred and twenty (120) days of the notice by Landlord.

b) Landlord Default. Landlord will be deemed to be in default hereunder if Landlord fails to perform any covenant or condition of this Lease to be performed by Landlord and such failure continues for thirty (30) days after written notice and demand from Tenant (unless the failure is of such a character as to require more than thirty (30) days to cure, in which event Landlord shall be in default only if it fails to initiate the cure within thirty days, and thereafter diligently pursue the same to completion provided such cure is completed within one hundred and twenty (120) days of notice, consistent with requirements of A.R.S. Title 34 and Landlord's Board of Supervisors Procurement Policy D29.1 located at http://www.pima.gov/cob/policy/D29-1.pdf).

c) Remedies. Either party may pursue any remedies provided by law and in equity for the breach of this Lease, including termination of the Lease, except that Tenant, because of the special nature of this rent-free Lease, which does not generate net revenues for Landlord, will not be entitled to pursue any monetary damages or penalties.

11) NOTICES. All notices to be given under this Lease must be in writing and either served personally or sent by certified or registered mail, return receipt requested, to the parties as indicated below or to such other persons, or addressees as either party may designate in writing to the other party:

TENANT: Director
Real Estate Administration
UNIVERSITY OF ARIZONA
1125 N. Vine, Room 103
Tucson, Arizona 85721
Telephone: 520/621-1813

LANDLORD: Clerk of the Board of Supervisors
130 W. Congress St.
Tucson, Arizona 85701

With a copy to:

Director, Pima County Facilities Management
150 W. Congress Street, 3rd Floor
Tucson, Arizona 85701

12) ASSIGNMENT. Tenant has no right to assign its rights under this Lease or sublease the Premises in whole or in part without the prior written consent of the Landlord. Because of the special nature of this Lease, such consent may be withheld by Landlord in Landlord's sole and unfettered discretion. Such an assignment or sublease, if permitted, does not constitute a release of any obligations of the Tenant due under this Lease. The Landlord agrees that should it desire to sell the Building, it will do so only subject to the terms and conditions of this Lease and further agrees to give at least thirty (30) days notice of any such intent to the Tenant.

13) NO LIENS OR INTERFERENCE. Tenant agrees not to incur, or if incurred to promptly remove, any obligations, judgments or other actions that result in a lien or encumbrance on the Premises.

14) DESTRUCTION OF PREMISES. If at any time during the Term of this Lease the Premises becomes partially or totally destroyed by reason of any damage by fire, flood, hurricane, windstorm or other casualty or act of God and the Landlord cannot or does not fully repair the Premises within ninety (90) days through no fault of the Tenant then the Tenant will be relieved of any further obligation, duty or liability under this Lease. If the Premises can be and are repaired fully in ninety (90) days, then the Lease will continue in full force and effect while the repairs are being made, and the Tenant's monetary obligations under this Lease will be abated by the percentage of the total space which is unavailable or not reasonably useful to the Tenant.

15) INSPECTION. Landlord will be given access to Premises to view and inspect its condition and state of repair upon reasonable notice to Tenant.

16) CONDEMNATION. If all or any part of the Premises are taken under the power of eminent domain or sold under the threat of exercise of that power, this Lease may be terminated by either party without further obligation.

17) DAMAGE TO PROPERTY. Tenant covenants that it will permit no waste or damage to the Building; that it will keep all improvements placed upon the Premises in reasonably good order and reasonably good state of repair.

18) QUIET ENJOYMENT. Landlord warrants that Landlord owns the Building and has the full right to make this Lease. Landlord further covenants that Tenant will have quiet and peaceful possession of the Premises during the entire Term as against lawful acts of third parties and as against the acts of all parties claiming title to, or a right to possess, the Premises through Landlord.

19) CHANGE IN OWNERSHIP. If ownership of the Building or the name or address of the party entitled to rent under this Lease changes, Tenant may, until receipt of written notice of such change, continue to pay operating expenses to the party to whom and in the manner in which the last preceding installment of operating expenses was paid. Tenant will not be subject to double liability for any amounts so paid.

20) SURRENDER/HOLDING OVER. On termination of Tenant's occupancy, Tenant will surrender the Premises in the condition in which Tenant is required to maintain them under this Lease. If Tenant for any reason and with written consent of Landlord remains in possession after the expiration of this Lease (including any optional extension), or after the date specified in any notice of termination given by either party, such possession will be as a month to month Tenant, subject to all conditions of this Lease other than the term hereof.

21) INTERPRETATION OF LEASE. Each party acknowledges that it has had the opportunity to review this agreement with counsel of its choice. This Lease will not be construed more strongly in favor or against either of the parties but will be interpreted fairly and equitably to effectuate the intent of the parties. All provisions contained in this Lease will bind and inure to the benefit of the parties hereto, their successors and assigns.

22) ENTIRE AGREEMENT. This Lease contains the entire agreement between the parties with respect to the Building and any previous agreements, negotiations, or understandings regarding the Building are superseded by and merged in this Lease. This Lease may be modified by the parties only by writing executed with the same formalities as this Lease.

23) NON-DISCRIMINATION. The parties will comply with all applicable state and federal statutes, regulations and executive orders governing equal employment opportunity, non-discrimination, and immigration.

24) STATE OBLIGATION. The parties recognize that the performance by both Tenant and Landlord may be dependent upon the appropriation of funds by the State Legislature of Arizona, the Board of Supervisors of the County, or the availability of funding from other sources. Should the relevant governing body fail to appropriate the necessary funds, if either party's appropriation is reduced during the fiscal year, or if funding becomes otherwise not legally available to a party hereunder, that party may terminate this Lease without further duty or obligation. Each party agrees to notify the other party as soon as reasonably possible after the unavailability of said funds comes to its Board's attention.

25) CONFLICT OF INTEREST. This Lease is subject to cancellation pursuant to the provisions of Arizona Revised Statute § 38-511 regarding Conflicts of Interest.

26) LAW TO GOVERN. This Lease is made under and shall be interpreted according to Arizona law.

27) AMERICANS WITH DISABILITIES ACT. Both parties will comply with all applicable provisions of the Americans with Disabilities Act (Public Law 101-336, 42 U.S.C. 12101-12213) and applicable federal regulations under the Act as it pertains to facilities and use of

the facilities. This will not obligate Landlord to make any modifications to the Building, as a result of any change in the law or regulations, if such repairs are not otherwise legally required.

28) This Lease is subject to approval by the Arizona Board of Regents pursuant to ABOR Policy #7-207.

IN WITNESS WHEREOF, we have set our hands and seals on the day and date first written above.

ARIZONA BOARD OF REGENTS
FOR THE UNIVERSITY OF ARIZONA

By: _____

Date: 12/18/12

PIMA COUNTY, a political subdivision of the State of Arizona

By: _____
Chairman of the Board of Supervisors

Date: NOV 13 2012

ATTEST:

_____
Clerk of the Board of Supervisors

APPROVED AS TO CONTENT:

_____
Director of Pima County Facilities Management

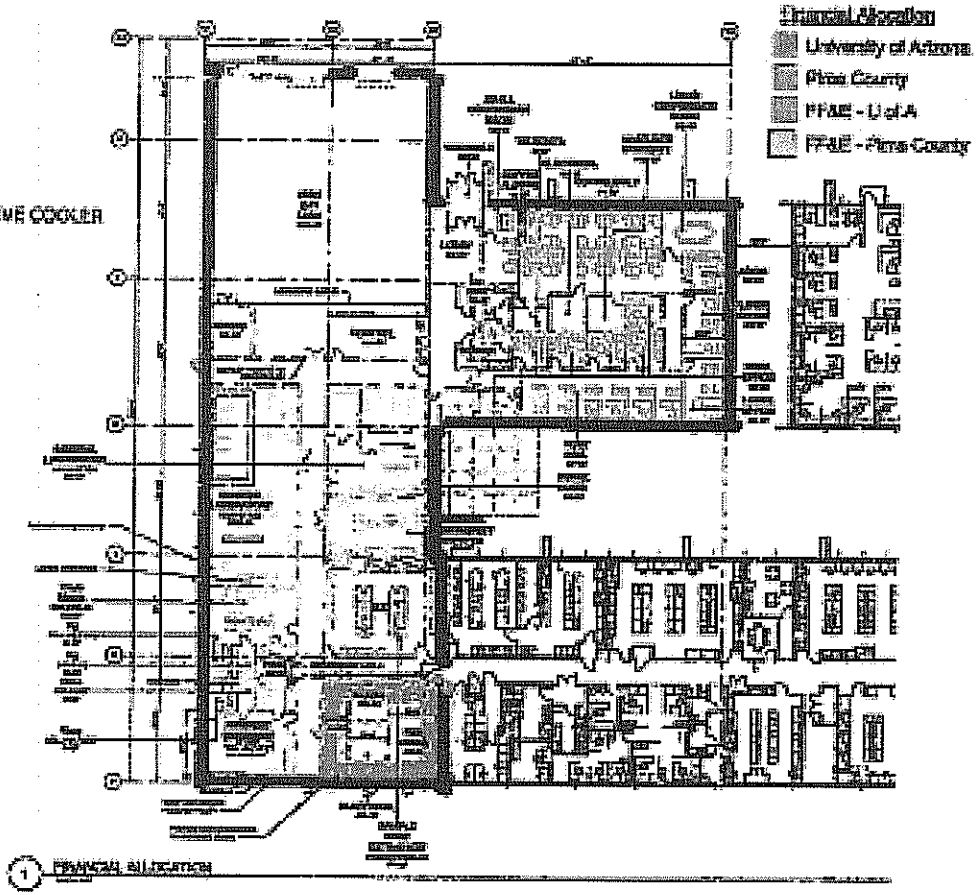
APPROVED AS TO FORM:

_____
Deputy County Attorney
REGINA NASSEN

Exhibits:
A: Floor Plan
B: Description of Addition and Parking Lot
C: HDR Study
D: Rules and Regulations
E: Tenant-provided Cabinetry and Equipment to be installed by Landlord

EXHIBIT A
WATER LAB LEASE PREMISES

HIGH BAY-EVAPORATIVE COOLER



1 FINANCIAL ALLOCATION

Space Allocation

University of Arizona lab	15,083 SF
University of Arizona office	6,370 SF
PC Wastewater lab	945 SF
TOTAL SIZE	22,400 SF

HDR

Project Status

ROMP WATER & ENERGY SUSTAINABILITY CENTER ADDITION

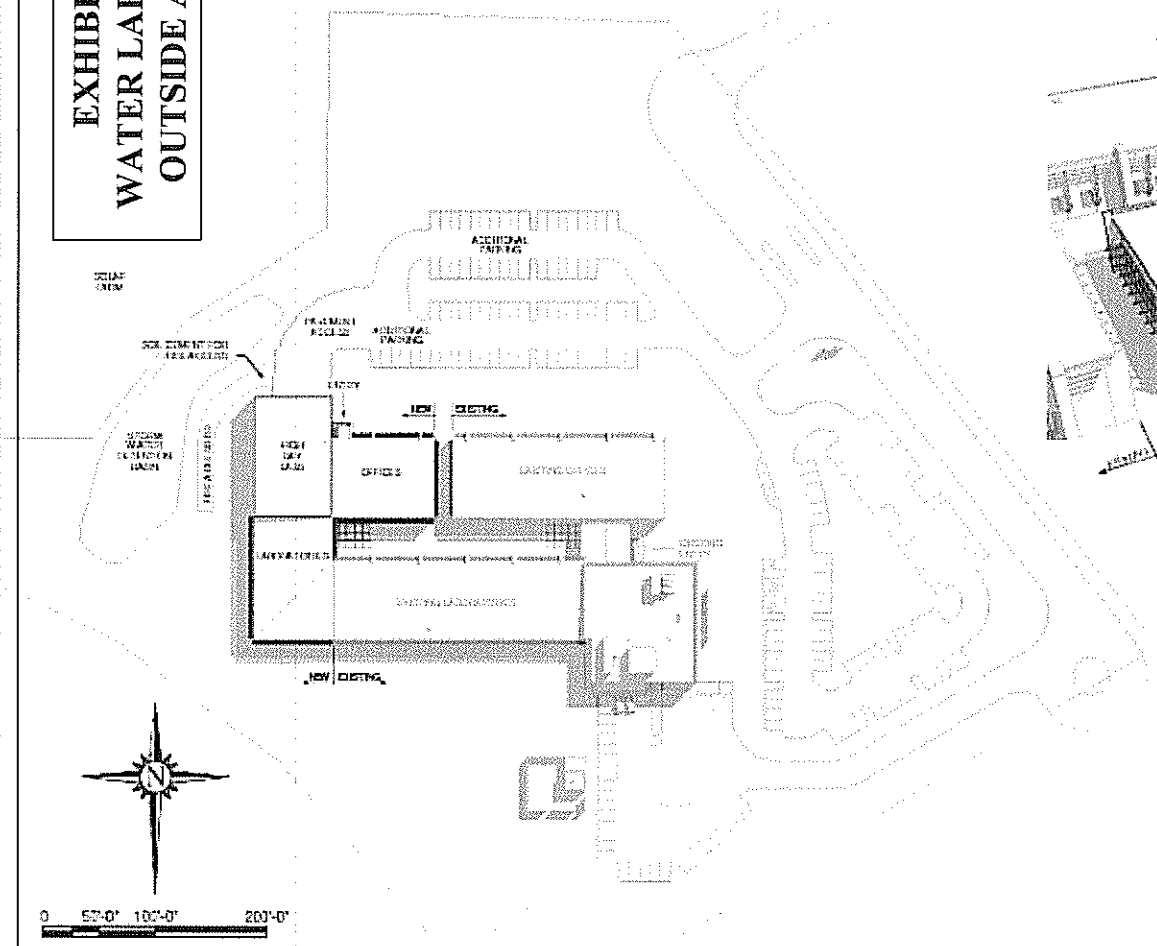
PIMA COUNTY

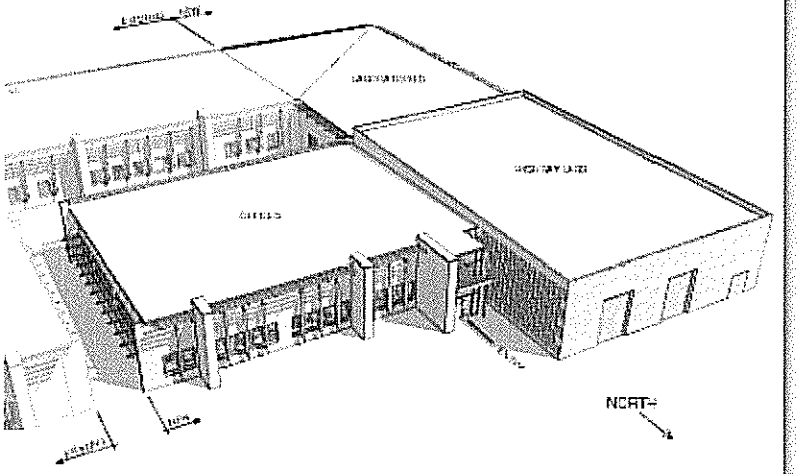
WATER RECLAMATION CAMPUS

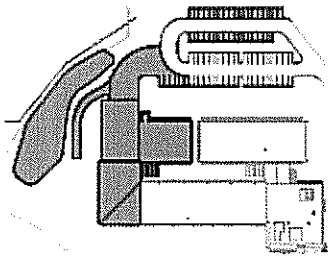
FLOOR PLAN - FINANCIAL ALLOCATION

A-04

EXHIBIT B
WATER LAB LEASE
OUTSIDE AREAS







NEW CONSTRUCTION KEY PLAN

HDR ARCHITECTURE, INC.

Compusult

Compusult, Inc.
Construction Cost Consulting

STUDY SUBMITTAL
WEST LAB EXPANSION

PIMA COUNTY
WATER RECLAMATION CAMPUS
3935 W. EL CAMINO DEL CERRO
TUCSON, AZ 85745

SITE PLAN AND AERIAL VIEW

A-01

05/16/2012

EXHIBIT C
Study

Pima County
Regional Wastewater Reclamation Department

WEST Lab Expansion

Water Reclamation Campus

STUDY SUBMITTAL

24 August 2012

HDR

THE SEAL OF PIMA COUNTY ARIZONA

Regional Wastewater Reclamation Department

August 24, 2012

John Hill, RA
Project Manager, PCFMD
130 West Congress Street, 3rd Floor
Tucson, AZ 85701

RE: WEST Lab, Study Submittal

John: This is the culmination of our four week effort for the WEST Lab study. We hosted a kick-off Charrette followed by an over the shoulder review Charrette. We thank you and your team as well as the PCRWRD and UA teams for participating in these two Charrettes. In the end we reached consensus on vision, direction and financial responsibility.

Attached are the agreed upon deliverables:

- Site plan and Aerial View
- Floor Plan
- North and West Building Elevations
- Design Analysis Narratives
    - Civil
    - Landscape
    - Structural
    - Architectural Interiors
    - Mechanical
    - Electrical
- Operations and Maintenance Study
- Building Energy (Model) Analysis Report
- Preliminary Construction Cost Estimate
- Records of Discussions from the two Charrettes.

This completes our WEST Lab Study. If you have any questions, please do not hesitate emailing those to me, and thank you again for all your assistance.

We await your notice to proceed to the next level of this project.

Sincerely,

HDR Architecture, Inc.

William H. Wells, AIA, LEED AP BD+C

Principal

HDR Architecture, Inc.

5210 East Williams Circle
Suite 530
Tucson, AZ 85711-4459

Phone: (520) 584-3600
Fax: (520) 584-3680
www.hdrinc.com

Contents

1. Design Analysis Narratives
   1.1. Civil
   1.2. Landscape
   1.3. Structural
   1.4. Architectural Interiors
   1.5. Mechanical
   1.6. Electrical
2. Operation and Maintenance Study
3. Energy Analysis Report
4. Preliminary Construction Cost Estimate
5. Drawings
6. Records of Discussions

1 Design Analysis Narratives

The following Narratives describe the project design parameters.

1.1 Civil

1.1.1 Civil/Site

The following is a general concept design outline for the civil site work required for the expansion of the PCRWRD WEST Lab.

1.1.2 Required Site Modifications

The following sections describe the general site civil considerations which will need to be taken in expanding the WEST Lab facility

1.1.3 Parking and Roadways

The expansion will require modifications to the north parking lot, H-20 vehicle access to the northwest corner of the new facility, and a fire access lane for the west side of the new building. The previous design did not require fire access around the entire perimeter, however the expansion will likely require new perimeter road.

These upgrades will be accomplished by providing the design and construction:

- Installation of the proposed additional parking spots outlined in the original civil site design on the north roadway of the north side parking lot
- Installation of a new u-shaped turnaround on the north side of the expansion to the west of the north side parking lot (4-inch base course with 2-inch asphalt course), approximately 19,000 SF
- Installation of a new soil cement fire lane from the new u-shaped turnaround at the northwest corner.

All new pavement will be curbed, ADA access ramps will be provided in the new parking lot area, and additional walkways will be provided as necessary.

1.1.4 Drainage

The existing site drainage will require redesign and construction modification to allow for the facility expansion. The following design and construction tasks will be required:

Design

- The existing drainage report will need to be revised to include the additional flows produced by the site modifications, and the general drainage plan will require a review to determine the most cost effective and aesthetic/compatible solutions
- The existing Storm Water Pollution Prevention Plan which includes permanent features will need to be reconsidered and modified if necessary.

Construction

- The detention basin on the west side of the facility will need to be reconfigured; the building expansion will infringe on the basin as currently designed, and the volume will need to be made up per a new grading plan
- The storm drain network which includes two 24-inch pipes (inlet and outlet to the large west side detention basin) will require modification; the inlet pipe will need to be relocated around the south west corner of the expansion (approximately 190 ft), and the outlet will need to be extended into the new basin configuration (approximately 135 ft).
- The drainage in the courtyard will need to be modified; a new storm drain will likely be required to drain this water (12/16 inch, approximately 250 ft).

1.1.5 Pavement Marking and Signage

The expanded site will require new pavement marking and signage which will match the existing site; however new signage and marking should be minimal.

1.1.6 Safety Upgrades

The expansion will need to comply with the ADA accessibility guidelines. Depending on the final facility design this could include new concrete walkways, ramps, and other features.

1.1.7 Earthwork/Grading/Landscaping

The expansion will require alterations to the existing hardscape on the west side of the existing facility. Small detention areas will need to be filled, landscape and water harvesting features will need to be removed, walkways and outdoor lounge areas will need to be removed/relocated, and gabion walls and custom fencing will need to be removed/relocated.

1.1.8 6-inch Plant Discharge Line

The new facility will require the installation of a new direct flow pipe from the discharge of the WESC WRF. The pipeline will be 6-inch PVC and approximately 1,800 ft in length. The alignment of the discharge pipe will need to be considered in redesign of the Westside drainage. The 6 –inch plant discharge line will be by UA (NIC).

1.2 Landscape

The Landscape Design will be consistent with the existing site development, both in terms of material selections, and plant palette and density.

1.3 Structural

1.3.1 Design Criteria

The design for this facility is based upon the 2006 International Building Code. The seismic lateral loads will be based upon seismic design category C and an importance factor 1.0. Wind lateral loads will be based on a 90 mph basic wind speed with exposure B and an importance factor 1.0. Design live loads will be as follows:

Roofs	20psf
Lab, Office and Administration Areas	80 psf
Mechanical Areas	150 psf

1.3.2 Foundations:

The proposed foundation system is assumed to be spread footings over engineered fill. Final system selection and design is to be dependent upon the final recommendations of the geotechnical report that has not yet been completed.

1.3.3 Roof Framing:

The roof of this structure will be sloped to allow the water to drain..

This system will have a gravity supporting roof system that will consist of 1 ½" Type B roof deck supported by steel open web bar joists which are supported by steel wide flange girders. Tube steel columns and the exterior wall system will be used to support the girders.

1.3.4 Lateral Framing System:

The lateral load resisting system will be intermediate Masonry Shear Walls.

1.3.5 Exterior Wall System:

The proposed exterior wall system will be constructed from reinforced and grouted concrete masonry units.

1.3.6 Materials of Construction:

Concrete:
Reinforcing – Fy = 60,000psi
Foundations – 3000psi

Masonry:
Reinforcing – Fy = 60,000psi
Walls – Medium Weight Concrete Block f'm = 2000psi

Structural Steel:
W Section ASTM A992 (Fy = 50 KSI).
HSS ASTM A500, GRADE B (Fy = 46 KSI)
Round HSS ASTM A500, GRADE B (Fy = 42 KSI)
All other plates and shapes ASTM A36 (Fy = 36 KSI)

1.4 Architectural Interiors

Interior Design will comply with Pima County Facilities Department standards, and be consistent with the existing building.

1.4.1 Room Finishes

Room Finishes will be in accordance with Pima County Facilities Department Standards, and consistent with the existing building. Accent colors and locations are to be developed in a later submittal. The following Table describes the expected finishes by major space type.

AREA	CEILING FINISH	WALL FINISH	FLOOR FINISH	OTHER
OFFICE SPACES	Acoustical Ceiling Tile	Latex Paint over Gypsum Wall Board	Carpet Tile	
LARGE CONFERENCE ROOMS	Acoustical Ceiling Tile with Gypsum Wall Board Soffits	Latex Paint over Gypsum Wall Board	Carpet Tile	
SMALL CONFERENCE ROOMS	Acoustical Ceiling Tile	Latex Paint over Gypsum Wall Board	Carpet Tile	
BREAK ROOMS	Acoustical Ceiling Tile	Latex Paint over Gypsum Wall Board	Vinyl Composite Tile	All built-in millwork finished in plastic laminate with laminate counter tops
BATHROOMS	Epoxy Paint over Gypsum Wall Board	Epoxy Paint & Ceramic Tile Wainscot over Gypsum Wall Board	Porcelain Tile	
LOBBY	Acoustical Ceiling Tile with Gypsum Wall Board Soffits	Latex Paint over Gypsum Wall Board & Concrete Masonry Unit	Carpet Tile	
MECHANICAL & ELECTRICAL SPACES	Open To Structure	Latex Paint over Gypsum Wall Board	Sealed Concrete	
JANITOR CLOSETS	Open To Structure	Latex Paint over Gypsum Wall Board	Sealed Concrete	
SAMPLE PREP EXTRACTIONS (WASTEWATER) LAB	Washable Acoustical Ceiling Tile	Epoxy Paint over Gypsum Wall Board	Coved Seamless Sheet Vinyl	All casework cabinets shall be wood with Epoxy counter tops. Finishes to match existing Labs
NUTRIENT (MICROBIOLOGY) LAB	Washable Acoustical Ceiling Tile	Epoxy Paint over Gypsum Wall Board	Coved Seamless Sheet Vinyl	All casework cabinets shall be wood with Epoxy counter tops. Finishes to match existing Labs
VIRUS (CELL CULTURE and PCR POST) LABS	Washable Acoustical Ceiling Tile	Epoxy Paint over Gypsum Wall Board	Coved Seamless Sheet Vinyl	All casework cabinets shall be wood with Epoxy counter tops. Finishes to match existing Labs

AREA	CEILING FINISH	WALL FINISH	FLOOR FINISH	OTHER
TRACE METALS (MOLECULAR) LAB	Epoxy Paint over Gypsum Wall Board	Epoxy Paint over Gypsum Wall Board	Coved Seamless Sheet Vinyl	All casework cabinets shall be wood with Epoxy counter tops. Finishes to match existing Labs
HG (CELL CULTURE and PCR PRE) LABS	Epoxy Paint over Gypsum Wall Board	Epoxy Paint over Gypsum Wall Board	Coved Seamless Sheet Vinyl	All casework cabinets shall be wood with Epoxy counter tops. Finishes to match existing Labs
PREP	Epoxy Paint over Gypsum Wall Board	Epoxy Paint over Gypsum Wall Board	Coved Seamless Sheet Vinyl	All casework cabinets shall be wood with Epoxy counter tops. Finishes to match existing Labs
GENERAL LAB (ENERGY)	Washable Acoustical Ceiling Tile	Epoxy Paint over Gypsum Wall Board	Coved Seamless Sheet Vinyl	All casework cabinets shall be wood with Epoxy counter tops. Finishes to match existing Labs
GENERAL LAB (SENSOR)	Exposed to Structure	Epoxy Paint over Gypsum Wall Board	Sealed Concrete	
GENERAL LAB (AQUATIC TOX)	Exposed to Structure	Epoxy Paint over Gypsum Wall Board	Sealed Concrete	
CONTROL ROOM	Acoustical Ceiling Tile	Latex Paint over Gypsum Wall Board	Vinyl Composite Tile	
CHEMS	GWB	Latex Paint over Gypsum Wall Board	Sealed Concrete	
HIGH BAY LABS	Exposed to Structure	Latex Paint over Gypsum Wall Board	Sealed Concrete	GWB Walls on 6" high concrete curb at perimeter
LAB CORRIDOR	Washable Acoustical Ceiling Tile	Epoxy Paint over Gypsum Wall Board	Coved Seamless Sheet Vinyl	

1.4.2 Furniture

Furniture for those labs, support and office spaces occupied by UA, will be by UA (NIC).

1.5 Mechanical

1.5.1 Applicable Standards

Codes and Standards

International Codes	
Building Code	2012
Fire Code	2012
Mechanical Code	2012
Plumbing Code	2012

Note: All codes include Pima County Amendments as applicable.

ASHRAE Standards	
55	Thermal Environmental Conditions for Human Occupancy
62	Ventilation for Acceptable Indoor Air Quality
90.1	Energy Standards for Buildings

ANSI Standards	
ANSI/AIHA Z9.5	Standard for Laboratory Ventilation

NFPA Standards	
13	Standard for Automatic Sprinkler Systems
45	Standard for Protection of Laboratories
90A	Installation of Air Conditioning, Heating, and Ventilation Systems

1.5.2 DESIGN CRITERIA

Site Design Criteria

Site Location		
	Elevation	2,556 ft, 13.34 PSIA
	Latitude	32.12° N
	Longitude	110.93° W

Climatic Design Data		
	Basis	2009 ASHRAE F, 0.4%
	Summer	104°F_{db}, 65°F_{wb}
	Dehumidification	95°F_{db}, 80°F_{DP}
	Winter	31°F_{db}, 0 gr/lb
	Cooling Degree Days	3,017 CDD65
	Heating Degree Days	1,578 HDD65

Seismic Zone and Wind Loads

The seismic lateral loads will be based upon seismic design category C and an importance factor 1.0. Wind lateral loads will be based on a 90 mph basic wind speed with exposure B and an importance factor 1.0.

Building Environment Design Criteria

Space Vibration Criteria	
	No specific criteria defined

Acoustic Criteria		
	General labs	NC 45
	Private offices	NC 35
	Other offices	NC 40
	Conference rooms	NC 35
	Corridors, Lounge	NC 45
	Utility areas	NC 55

System/Component Sizing Criteria – HVAC

Infiltration Rate		
	Labs	Assume Zero
	Offices / Common	Assume Zero

Minimum Outside Air Ventilation Rates

	General Labs	100% outside air
	Offices	20 cfm/person
	Lobby/Lounge	10 cfm/person
	Conference	10 cfm/person
	Corridors	0.05 cfm/sq ft for unoccupied spaces
	Occupancy Load	75 People
	Restroom	75 cfm/fixture

Fume Hoods

	Type	Low flow, variable volume
	Size	4 ft, 6 ft, and 8 ft
	Density	10 fume hoods included in the project
	Face Velocity	
		100 fpm at 18" sash height
		60 fpm at 24" sash height
	Exhaust flow rate	
		484 cfm (4 ft hood)
		784 cfm (6 ft hood)
		1084 cfm (8 ft hood
	Canopy Hoods	Constant Volume, flow based on size, as required by Lab Design

Snorkels / Others

	Design Flow	350 cfm
	Density	As Required by Lab Design

Space Heat Load Criteria

	General labs	10 W/sf to air, 30% diversity
	Service corridor	4 W/sf to air, 50% diversity
	All other lab areas	4 W/sf to air, 30% diversity
	Offices	4 W/sf
	Copy/Work areas	10 - 20 W/sf
	Break areas	5 W/sf
	Vending	12 W/sf
	Mechanical	10 W/sf
	Electrical rooms	20 W/sf
	Comm. rooms	60 W/sf

Space Heat Load Criteria Other

Lighting (labs)	1.4 W/sf
Lighting (offices)	1.1 W/sf
People	
	200 BTUh/person (sensible)
	250 BTUh/person (latent)

Zoning

Laboratories	one zone/lab
Open spaces	900 sf (maximum)
Closed spaces	4 spaces/zone (maximum)
Perimeter spaces	one zone for spaces with 2 external walls
Conference	one zone/room
Maximum flow	1,500 cfm/zone

Maximum Air Velocities – Ducting

Makeup Air	2,000 – 3,000 fpm
Cold Air (main)	2,000 -2,500 fpm
Return Air (main)	2,000 fpm
Supply Air	1,500 fpm
Return Air	1,500 fpm
Exhaust Air	500 To 3,000 fpm

Minimum Air Velocities – Air Grilles

Outside Air	300 - 500 fpm (Free Area)
Supply Air	500 fpm
Return Air	300 - 500 fpm
AHU Coils	450 to 500 fpm
Supply Air HEPAs	80 fpm (ceiling mounted)
Return Air Chase	200 fpm (maximum)
AHU Filter Banks	500 fpm
Exhaust Stacks	3,500 fpm (minimum)

Ductwork Design Criteria

From fan to VAV box	4" w.g. positive (office)
From fan to Lab Air Valve	3.2" w.g. positive (lab)
Downstream of VAV box	1" w.g. positive
Return air	1" w.g. positive or negative
Lab exhaust	6.2" w.g. negative
Restroom/general exhaust:	2" w.g. negative
For Pressure <-4" w.g. or >+ 10" w.g	SMACNA

Ductwork / Insulation Design Criteria

Flame Spread Rating	25 (Max)
Smoke Developed Rating	50 (Max)

System/Component Sizing Criteria – Mechanical

Pipe Velocities (Maximum)

½ To 1 Inch	5 fps
1-1/2 To 3 Inch	6 fps
4 To 12 Inch	7 fps
14 To16 inches	9 fps
18 to 24 inches	10 fps

Maximum Pressure Drop

4 ft/100 ft

System/Component Sizing Criteria – Plumbing

Building Design Occupant Load

Occupant Load Based on Plumbing Code

Fixtures

Waterless Urinals

Low-flow, automatic flush actuated water closets, battery powered

Low flow sensor actuated lavatory faucets, battery powered

Rainfall

6 inches per hour

Wall Hydrants and Hose Bibbs

Located at the ground level building perimeter at 100 ft intervals.

Located within the building at general purpose laboratories.

Located within the building within mechanical equipment rooms.

Located at the roof level as determined necessary for equipment maintenance and cleaning.

Piping

Domestic hot and cold water	Type L copper, silver soldered, insulated hot water piping.
Non-potable hot and cold water	Type L copper, silver soldered, insulated hot water piping.
Cooling coil condensate	Type L copper, silver soldered
Sanitary Waste	Service weight cast iron, no hub with 4 stainless steel bands per fitting, or hub and spigot
Laboratory waste	Schedule 80 PVC.
Storm Water / Rain Leaders	Service weight cast iron, no hub with 4 stainless steel bands per fitting, or hub and spigot

1.5.3 HVAC SYSTEMS – LABORATORIES

Function

The Laboratory areas of the project will be served by a single HVAC system. The system is designed to provide once through air to the areas.

Major Equipment

- Laboratory MUA units

Two (2) units providing 7,000 CFM of outside air capacity for the General Labs

Two (2) direct evaporative cooling units providing 7,000 CFM for the High Bay Labs

System Description

General Laboratory MUA unit will be configured with OSA inlet plenum / Access Section, Pre Filter Bank, Access Section, Energy Recovery Coil, Access Section, Cooling Coil, Access Section, Heating Coil, Access Section, Supply Fan, Access Section, Final Filter Bank, and Supply Plenum.

Performance Criteria

Partial redundancy in the form of shared excess capacity will be provided for the dry laboratory AHU's, with each unit sized for 2/3 of the peak capacity.

Local supply and exhaust air valves within the laboratories will be modulated to maintain room pressurization requirements (negative to adjacent spaces). Supply air flow rates to laboratories will be modulated from a low level of 4 air changes per hour up to the flow rate required to offset exhaust and to meet cooling requirements for the spaces. During normal activities, supply air flow will be modulated to the lowest room setting which satisfies room pressurization requirements. Exhaust from the room will be modulated as necessary to maintain space negative pressurization during periods of increased supply air flow.

1.5.4 LABORATORY EXHAUST SYSTEMS

Function

Exhaust from the laboratories will be provided to maintain room pressurization, air change requirements and exhaust from fume hoods throughout the building.

A general laboratory exhaust system will function for all general lab space exhaust and for fume hood exhaust. All exhaust from the general laboratory exhaust system will pass

through a sensible energy recovery coil, to provide energy recovery to the general laboratory MUA units through a run-around energy recovery system.

Major Equipment

- Laboratory Exhaust (general and fume hood)

Two (2) exhaust fans each providing 7,000 CFM of exhaust capacity, directly connected to energy recovery plenums will serve the building.

System Description

Laboratory Exhaust / Fume Hood Exhaust/ General Exhaust will be through one exhaust system. All exhaust ductwork from fume hoods to the inlet of the sensible energy recovery unit shall be welded stainless steel. Sensible heat / cooling will be harvested from the exhaust air stream through a hydronic run-around heat recovery system, before entering the exhaust fans. The exhaust fans for the general laboratory exhaust / fume hood exhaust system are constant velocity discharge dilution air entrainment type fans. Bypass dampers at the plenum inlet to the exhaust fans will be modulated to maintain air volume into the exhaust fans to achieve a constant exhaust discharge velocity.

Proximity sensors at each fume hood will monitor local proximity of occupants to each individual fume hood. During instances when the hood sash is opened, but no user has been within the proximity detected by the hood proximity sensor, exhaust from the fume hood will be reduced to maintain 60 feet per second face velocity. When the proximity sensors detect activity within the proximity sensors range, exhaust from the open sash hood will be increased to achieve a face velocity of 100 feet per second.

An active air quality monitoring system will be provided to maintain proper exhaust flow and gain maximum energy conservation.

Performance Criteria

Partial redundancy in the form of shared excess capacity will be provided for the laboratory exhaust system, with each unit sized for 2/3 of the peak capacity.

1.5.5 HVAC SYSTEMS – OFFICE AND SUPPORT AREAS

Function

The office areas will be served by a separate HVAC system, to provide comfort cooling and heating and to maintain indoor air quality through the introduction of fresh outdoor air.

Major Equipment

- Office Air Handling Unit

One (1) unit, with multiple supply and return fans to provide a total air volume of 5,000 CFM of air handling capacity.

- Fan-Coil Units

Fan coil air handling units will be provided to serve electrical rooms, telecommunication, data, mechanical equipment rooms, Aquatic Toxicology suite and Sensor Lab.

System Description

The air handler serving the office and general areas will be provided with sound attenuators at return and supply plenums (if required to achieve sound criteria compliance) return / exhaust fans, full economizers, outside air inlet plenum, filtration sections, preheat, cooling and reheat coils, and supply air fans. The units will be capable of providing up to 100% outdoor air to the office and general spaces through the economizer section during times when outdoor conditions permit. The units will be capable of high end humidity control, to allow the unit to remove excess moisture from the air stream during periods of high humidity.

The office HVAC system will be a variable air volume system, with VAV terminal units, distributed to serve the office and general areas. Terminal units serving exterior zones will be provided with zone reheat capacity. Interior zone terminal units will not be provided with reheat. Multiple rooms with similar exposure will be served by a common terminal unit, typically 3 to 4 like spaces served by a single unit.

CO2 sensors within the return ductwork will provide feedback to the air handler controls. Outdoor air introduced to the building through the air handlers will be reduced, when not in economizer mode, or increased as necessary to maintain building CO2 levels below acceptable limits.

Performance Criteria

No redundancy is provided in air handling capacity for the office air handling unit, but the unit will be configured with multiple fans to allow partial capacity operation in the event of a single fan failure.

No redundancy is provided in the air conditioning system to areas served by fan coil units.

1.5.6 GENERAL EXHAUST

Function

The laboratory exhaust system will provide exhaust for the toilet rooms, copy rooms, break areas, and other occupied areas requiring direct exhaust.

Performance Criteria

The toilet rooms will be exhausted at the rate required by the mechanical code.

Other areas will be exhausted at the code required minimum rates.

1.5.7 CHILLED WATER

Function

Cooling will be generated on site by two air cooled chillers.

Major Equipment

- (2) 80 ton Air cooled scroll Chillers
- Chilled Water Pumps

System Description

Horizontal configuration split case pumps will be provided within the mechanical equipment room. Chilled water will be generated by two air cooled chillers, and will be used directly for building cooling. Chilled water system piping will be Schedule 40 steel piping, welded for piping sizes down to 3 inches in diameter. Distribution piping smaller than 3 inches will be type L copper, silver soldered.

Performance Criteria

Partial redundancy in the form of shared excess capacity will be provided for the condensing boilers and heating water pumps, with each unit sized for 2/3 of the peak capacity.

1.5.8 HEATING WATER

Function

Heating will be by heating hot water generated by two condensing boilers located within the mechanical equipment room.

Major Equipment

- (2) 500 MBH Condensing boilers
- Heating Water pumps

System Description

Horizontal configuration split case pumps will be provided at the mechanical equipment room. Heating hot water system piping will be Schedule 40 steel piping, welded for piping sizes down to 3 inches in diameter. Distribution piping smaller than 3 inches will be type L copper, silver soldered.

Performance Criteria

Full redundancy will be provided for the condensing boilers and heating water pumps, with each unit sized for 100% of the peak capacity.

1.5.9 PLUMBING

Function

Major Equipment

- Gas fired storage type domestic water heater
- Gas fired storage type non-potable laboratory use hot water heaters
- Laboratory Waste drain system
- Emergency Wash Stations

System Description

Laboratory use non-potable hot and cold water will be provided to supply water to laboratory fixtures.

Domestic water heaters gas fired storage type water heaters. One unit will be provided. Domestic hot water will be distributed throughout the building to lavatories, service sinks and kitchenette areas.

Laboratory use non-potable water heater will be gas fired storage type. One unit will be provided. Non-potable hot water will be distributed throughout the building to fixtures within the laboratory areas.

Laboratory waste drains will be installed to collect waste from fixtures within the laboratory areas and will gravity drain to the city sanitary waste system. A sampling flume will be provided for sampling of laboratory waste discharge prior to connection to

the city sanitary waste system. Laboratory waste system piping will be schedule 80 PVC. Sump pump discharge system piping will be welded schedule 40 steel.

Emergency wash stations will be provided within laboratories. Emergency eyewash, emergency shower and combination emergency eyewash and safety shower module types will be provided based on laboratory type and usage.

Performance Criteria

Two domestic, gas fired, storage type hot water heaters will be provided, each with 100% capacity for domestic potable hot water and for laboratory use non potable industrial hot water

Emergency wash stations will be monitored for use. Activation of a wash station will initiate an alarm at the central control station and at the building security station.

1.5.10 Process Systems

Laboratory utility systems for the project include: nitrogen and RODI water. The other laboratory gasses will be distributed from local gas cylinder closets. All of the process gases will be distributed to the laboratories where their use is specifically identified, and valves for future connection will be provided for labs which do not immediately require these utilities.

The RODI will utilize and extend from the existing building's RODI distribution system

Only utility systems specifically required in the laboratory will be extended into the laboratories and connected to the equipment and laboratory casework.

1.5.11 Building Automation and Controls

The project automation systems will be controlled and monitored from the downtown central plant Delta frontend. The downtown central plant will perform all data trending and data storage. The building will be provided with a local control station within the mechanical equipment control room for on site system control. The system will be Ethernet-based native BACNET compliant distributed digital control system (DDC), compatible with the downtown central plant Delta frontend control system.

1.5.12 Fire Protection

A Class "A" fire alarm system and a wet-pipe automatic fire sprinkler system will be provided to comply with the requirements of the International Building Code (IBC) and International Fire Code (IFC).

1.5.13 Fire Alarm System

Fire Alarm - The Class "A" fire alarm system will comply with the applicable sections of the referenced codes and standards. The fire alarm system is designed to notify the building occupants of a fire, supervise the system locally, and provide local trouble notification.

Applicable Codes

- International Fire Code – 2006, with Pima County Amendments
- International Building Code – 2006, with Pima County Amendments
- NFPA 72 – 2002, National Fire Alarm Code;
- NFPA 70 – 2004, *National Electric Code*, with Pima County Amendments

1. Signals - When the fire alarm control panel (FACP) receives a signal from any manual or automatic fire detection device, the common area notification appliances will actuate. All the Alarm, Supervisory, and Trouble signals are transmitted to the central monitoring station.
2. Manual Fire Alarm Boxes – A Manual fire alarm box is to be located at a constantly attended location or at the FACP. When actuated, an alarm signal will be sent to the FACP, which will start the general alarm sequence throughout the building as described above. All manual pull boxes will be dual action type.
3. Water Flow and Tamper Switches - When a sprinkler water flow switch is actuated, an alarm signal will be sent to the FACP, which will start the general alarm sequence throughout the building. There is no verification cycle on a water flow switch actuation. When a sprinkler tamper switch is actuated, a supervisory signal is sent to the FACP. The supervisory system will reset upon valve restoration. The alarm signal will lock at the FACP until acknowledgement and system reset functions are used.
4. Smoke Detection Equipment - Area smoke detectors will be provided in mechanical / electrical equipment rooms. Duct smoke detectors are to be provided for HVAC units throughout having a capacity greater than or equal to 2000 CFM. All smoke detectors will be connected to the fire alarm system.
5. Audible and Visual Notification – The notification appliances are to be located throughout the common areas of the building and contain a combination strobe light and horn, strobe only, or horn only. The evacuation signal will comply with NFPA 72 – 2002. The notification appliance circuits will comply with NFPA 72 – 2002 and NFPA 70 - 2005. Where multiple strobes are visible from a single location the flash will be synchronized.

1.5.14 Automatic Fire Sprinkler System

Automatic Fire Sprinkler System - The wet-pipe fire sprinkler system will be installed throughout the building in accordance with the 2006 International Building Codes. A single fire riser is anticipated. Installation of the sprinkler system will be in accordance with the NFPA 13 *Standard for the Installation of Sprinkler Systems.*

Applicable Codes

- International Fire Code – 2006, with Pima County Amendments
- International Building Code – 2006, with Pima County Amendments
- NFPA 13 – 2002, Installation of Sprinkler Systems

6. Monitoring -The fire sprinkler system tamper valves and flow switches are to be monitored by the fire alarm control panel as required by the IFC - 2006. All signals are to be transmitted to an approved central monitoring station.
7. Water Supply – Water Supply data for hydraulic calculations will be based on 90% of the available water supply as determined by flow test information.
8. Design Density – All fire sprinkler design densities shall comply with NFPA 13 – 2002. The fire sprinkler system design densities anticipated include Light Hazard and Ordinary Hazard Group I.
9. Fire Department Connection – A fire department connection is required by IFC Section 912 to be located on the street side of the building.
10. Standpipes – Standpipes are not anticipated at this time.
11. Fire Pump – Fire pumps are not anticipated at this time.

1.6 Electrical

1.6.1 Electric Service

Electric service will be provided by Tucson Electric Power at 480Y/277 volt, 3 phase, 4 wire. The present estimated demand load is approximately 730 KVA. The Pima County will provide a 750 kVA pad mounted transformer to serve a 1000 amp main service entrance switchboard. This project will include providing conductors and conduit from the main electrical room to the secondary side of the service transformer. Connection sizes and quantities will be coordinated with the Client.

Applicable electrical code is NEC 2005 with Pima County Amendments.

The main switchboard will be NEMA 1 construction, front accessible and front and rear aligned. Service switchboard shall include:

- Utility metering section as required by the power company.
- 1000 amp main circuit breaker with ground fault protection.
- Surge Protection Device (SPD) with disconnect and fusing.
- Customer metering with C/T's and electronic meter indicating the following:
  - Phase RMS current.
  - Phase to phase and phase to neutral RMS voltage.
  - Total real power in watts.
  - Total peak power in watts.
  - Total energy in watt-hours.
  - Power factor.
  - Frequency in hertz.
- Group mounted molded case feeder circuit breakers.
- Connection to Building Management System (BMS) via Native BACNET.

NEW SERVICE ENTRANCE SECTION "SES" 3PH, 4W, 277/480V		
TOTAL AREA INCLUDING 12000SF LAB = (21500 SQ. FT.)	AREA(sf)	LOAD (VA)
LIGHTING Lab Space @ 1.4 VA/SF X 125%	12000	21000
LIGHTING General Space @ 1VA/SF X 125%	9500	11875
RECEPTACLES @ 2.0VA/SF X (21500-12000-150) 100%	9350	18700
LAB POWER @ 10.0VA/SF X 12000 SF X 100%	12000	120000
HVAC @ 24.0VA/SF X 100%	21500	516000
TELECOMS, LAN @ 30VA X 150 SF X 100%	150	4500
MISCELLANEOUS @ 2.0VA/SF X 100%	21500	43000
TOTAL		735075
AMPS @ 277/480V, 3PH		885.2

NOTE:

1.6.2 Telephone Service

Telephone service will be provided by Qwest Telephone Company. HDR will provide points of connection, it is anticipated to have at least (2) 4" conduit to the building telecomm room.

Connection sizes and quantities will be coordinated with the Client for site work.

1.6.3 Power Distribution System

Normal Power Distribution System

Normal power lighting, mechanical, and distribution panels will be 480Y/277 volt. Lighting panels will serve areas of approximately 30,000 square feet, with a maximum circuit length of 200 feet. 208Y/120 volt branch panels will serve areas of approximately 10,000 square feet, with a maximum circuit length of 100 feet. Dry type transformers will step the voltage down for branch panels.

Dry-Type Transformers will have 480V primary, 280Y/120 V secondary, air-cooled, three coil, two winding, Class H insulation, 115° C temperature rise, with (4) 2-1/2 percent FCBN taps and (2) FCAN taps. Additional transformer will be required to accommodate specific laboratory equipment power requirement (i.e. 230V, 400V etc.).

Panelboards will be located near the loads they serve. All panelboards will be bolt on circuit breakers type, with size and short circuit ratings as required. Panelboards located at the secondary of dry-type transformers will have main circuit breakers rated less than 150% of the transformer secondary full load current.

Safety Switches will be heavy duty type in NEMA 1 enclosure, NEMA 3R in outdoor locations, fused where required by code or by equipment manufacturers requirements.

A Surge Protection Device (SPD) will be provided to protect sensitive electronics and computer systems from electrical transients and high frequency noise. SPD protection will be located as determined by system load configuration.

To reduce overheating of the neutral conductor due to harmonic currents caused by switch mode power supplies in computer equipment, the neutral of multi-wire branch circuits will be sized at 175 percent of the phase conductors. This oversized neutral will occur at multi-wire branch circuits which may have computer equipment connected. The use of oversized neutral has two benefits over separate circuits. The first benefit is reduced cost, since wire and conduit are reduced. The second benefit is reduced voltage drop, since 3- phase voltage drop is less than single phase voltage drop.

Motor controllers will be located in close proximity to the motors they serve. Motor controllers will contain a motor circuit protector, a magnetic starter with suitable overloads

relays, two auxiliary contacts, a control circuit transformer, a selector switch, and pilot light. Motor controllers on generator power will have adjustable time delays to reduce voltage dip when starting on generator power. Motors ½ horsepower and above will be 480 volts, 3 phase, 3 wire. Motors less than ½ horsepower will be 120 volts, single phase with manual motor starters.

Voltage drop will be limited to less than 2% for main feeder runs and less than 3% for branch circuits.

Exposed conduits will be RGS or IMC below 6 FT above the floor. Conduit in contact with earth will be RGS, IMC or heavy wall PVC with a ground conductor sized in accordance with NEC (paragraph 250.94). Connections to all vibrating equipment and for branch circuit wiring in casework and in millwork will be flexible metal (steel) conduit in accordance with NEC article 350. All other conduits will be electric metallic tubing (EMT) with compression fittings, minimum size 3/4 IN. EMT may be used exposed directly above equipment with installed height of 6 FT or more above the floor.

Wire sizes #10 AWG and smaller will be solid copper with Type TW, THWN or THHN 600 volt insulation. Wire of sizes #8 AWG and larger will be stranded copper with type XHHW, THW or THHN 600-volt insulation unless noted. The minimum conductor size will be No. 12 AWG. Control wiring may be No. 14 AWG. A separate ground wire will be installed in all feeders and branch circuits. Splices for wire sizes #10 AWG and smaller, will be conical spring type devices. For wire size #8 AWG and larger splices will be compression type or split-bolt connectors with sufficient layers of tape to equal insulation of wire being spliced.

A driven electrode grounding system will be provided to supplement the water main ground. The system will be designed to limit the grounding system resistance to less than 5 ohms. Tie-in to existing ROMP ground loop.

Building standard receptacle will be duplex, white, specification grade NEMA 5-20R. Emergency power receptacles will be red color. Devices will have matching cover plates.

Brand preference for electrical gear is as follows: (not in order of preference) GE, Sq.D., Cutler-Hammer.

Emergency Power Distribution System

Pima County and U of A indicated that no emergency power is needed since utility power was considered a reliable source. Power to the site is connected to two different TEP sources. At present no emergency power will be provided to the new building except for Pima County Fish Lab which will tap to the existing 200kW generator of the existing ROMP. Provide conduit and conductors from the main electrical room to the existing generator in the service yard.

Battery Lighting System

Emergency battery backup ballast will be provided for egress lighting in lieu of emergency generator back-up egress lighting.

Uninterruptible Power Supply (UPS) System

No central UPS system will be provided. Point of use UPS will be provided as an OFOI (Owner Furnished Owner Installed) item.

1.6.4 Lighting System

All lighting systems will be designed to meet 2007 ASHRAE 90.1 (Chapter 9, Lighting) as a minimum in order to achieve LEED Silver status. Fixture selections will be made to maximize energy efficiency while maintaining illumination requirements where fixture types are not specified. The final energy modeling will use the fixtures as indicated on the documents in order to develop life cycle energy costs and usage.

Interior Lighting

Building standard lighting fixtures will be direct/indirect fluorescent fixtures with T8 lamps and electronic ballasts. Fixtures will have two or three lamps as applicable to achieve the lighting levels for the area they are installed. Compact fluorescent downlights will be used in areas such as conference rooms to provide multi-level lighting.

General lighting in support areas will be recessed/surfaced/pendant/chain fluorescent parabolic or lens fixtures. Warehouse type lighting on high bay area as well as some laboratory spaces.

Combination switches/automatic control/ photocell will be designed at the entry to each space in order to achieve lighting control required for LEED NC V3 Credit IEQ 6.1. Controllability of System (Lighting)

Dimming controls will be provided in conference rooms and training rooms for general meetings and presentations.

Lighting will be designed to the levels as recommended by the IESNA design guide:

- 60-75 Footcandles for typical laboratory spaces
- 30-50 Footcandles for typical office spaces including all administrative spaces, communication and conference spaces.
- 20-30 Footcandles for facility support spaces and physical plant.
- 15-20 Footcandles for facility service spaces, stairways, corridors, toilets, washrooms, and locker rooms.

Exterior Lighting

Site area / parking lighting are not included in this contract.

Building exterior(s) will have emergency fixtures at each exit to maintain egress lighting levels.

1.6.5 Systems

Telephone and Data Systems

A main Telephone/data room will be provided at the center/middle of the building on the mezzanine. This serves the whole area of approximately 40,000 square feet, with a maximum circuit length of 290 feet. Satellite comm. rooms will be provided for runs exceeding this distance. Empty equipment racks will be provided for all telephone/data rooms.

All T/D rooms will have 4'x8'x¾" plywood backboards for telephone and data.

T/D outlets will be 2-gang back box with single gang blank cover plate and 1 inch conduit with pull wire to above nearest accessible ceiling.

Telephone/data system, telephone outlets, data outlets, backbone and horizontal cables CAT6A, connector blocks, jacks, and cover plates, distribution frames, switching, control, and instruments will be by UA (NIC).

Cable tray will be provided along all major corridors routed to the main telecomm room(s).

Flush mounted floor boxes will be provided for power and data/telecom in conference rooms.

AV projectors and motorized screens will be provided for large conference rooms, will be by UA (NIC).

Security System

Security Equipment

The security system for the new building envelope will be provided as an extension of the existing ROMP security system.

CCTV Camera and Intrusion Detection Systems. CCTV and IDS inside new building is not in contract. Any monitoring will be by U of A and would be an entirely separate system not tied into the original ROMP building intrusion system or into the County's

CCTV. However, intrusion detection and access between the County and U of A sides of building will be provided. The card readers shall be included as part of general contractor scope.

Security Systems Raceways and Distribution:

The raceway systems for the security systems will consist of device boxes (both special and standard electrical types), conduit, wire way, junction boxes, and termination cabinets. All circuits will be in conduit. Horizontal distribution will consist of conduits and other raceways from the equipment cabinets to each designated device.

Public Address

No Public Address and sound distribution system will be provided.

Radio system

No Radio system will be provided.

Television System

Conduit, outlet boxes will be provided for the Television System.

Outlets will be located as designated by the Client.

Cables will be run to a central TV cabinet. One 2" empty conduit will be run to the roof from telecom room for connection to satellite and or antenna.

Lightning Protection System

A complete lightning protection system will be provided for the buildings with down conductors to earth driven ground rods in counterpoise. Tie in to existing ROMP counterpoise.

Lighting protection system will be provided in accordance with UL-96 and NFPA 780 and bear the UL Master C label.

Other Equipment / Systems

U of A will be responsible for providing and installing the following systems or contracting for them separately. This includes all equipment and wiring not already indicated on plans.

- Telephones and pay telephones
- Computers and computer networks, CCTV system, CAT6A cabling.

- Radio, VCR audio-visual systems

2 Operations and Maintenance Study

2.1 Disclaimer

The information presented in this report and any attached appendices and documents is for the purpose of assistance in design only. This information is not to be used for design decisions without further engineering analysis.

The utility consumption results included herein are generated from software that uses calculation algorithms and formulas based on industry adopted methods. The results may differ from actual conditions.

2.2 Executive Summary

The purpose of this study is to provide an estimate of the Operations and Maintenance (O&M) costs the University might incur from leasing and occupying the new wing of the West Lab. This study does not include the cost of the lease. Rather its focus is on the estimated costs the University would pay the utility companies for electricity, natural gas, water and sewer. It also includes the additional costs the University would pay the Pima County Facilities Management for O&M fees, as well as a contractor for janitorial services. The following table shows the cost breakdown by provider. The remaining sub sections provide details on each line item.

Breakdown of O&M Costs by Provider

Provider	Type	Annual Cost
Tucson Electric Power	electricity	$ 84,905
Southwest Gas	natural gas	$ 15,504
Pima County Facilities	facility O&M	$ 44,770
Janitorial Service Contractor	janitorial	$ 21,600
Tucson Water	water	$ 5,069
Pima County Sewer	sewer	$ 6,758
		$ 178,605

2.3 Electricity and Natural Gas

An energy model was developed to estimate the annual electricity and natural gas consumption and cost. Details of the model inputs and outputs can be found in Section 3 of this report, Building Energy Modeling.

Electricity Rate (Tucson Electric Power – GS-10 Utility Rate)

Note the following charges include a 7.5% increase to account for the proposed rate increase.

Customer Charge - $ 14.0 / month

Base Power Supply Charge – Summer - $0.0339 / kWh, Winter - $0.0260 / kWh

Delivery Charge -

	Summer (May-Oct)	Winter (Nov – April)
First 500 kWh	$0.0605	$0.0551
All remaining kWhs	$0.0913	$0.0861

Natural Gas Rate – (Southwest Gas - Uniform flat rate of $1.34/ Therm)

The results are provided in the following table.

Estimated Electricity and Natural Gas Consumption & Cost

Utility Provider	Units	Annual Consumption	Annual Cost
Tucson Electric Power	kWh	711,000	$ 84,905
Southwest Gas	therm	11,570	$ 15,504
			$100,409

2.4 Pima County Facilities Management

HDR requested an estimate of anticipated operations and maintenance costs for the proposed new wing. The following is a copy of this estimate. Note that utility costs and contracted janitorial services have been excluded.

Pima County Facilities Management Annual Facilities R&M Estimate UA ROMP Wastewater Lab		
Account	**Description**	**Annual Amount**
5400	Salaries & Wages (1/4 FTE)	$ 10,400
5431	Benefits (30% of salaries)	$ 3,120
5430	Interdepartmental Salaries	$ -
5010	R & M Supplies A/C Filters-$600 Cel Dek Pads-$1800 Pumps/belts/bearings/floats-$500 Lighting-fluorescents/ballasts/wall paks/accent lighting-$100	$ 8,800
5300	Phones/Pagers + Alarm Lines (40 X 2 lines x 12)	$ 960
5301	Electricity	By Utility
5303	Natural Gas	By Utility
5302	Water & Sewer	By Utility
5304	* Refuse/Recycling ($250 mo. for both)	$ 3,000
5150	R&M Buildings & Grounds Automatic Doors Maintenance-$600 Overhead Door Maintenance-$1500 Fire Alarm Inspection/Testing-$1500 Air Flow/Negative Air/Air Balance-$2000 Flow hood certification (annual)-$500 Pest Control $600 **Emergency Generator Test, Service & Permit **NOT INCLUDED**	$ 6,700
	O&M Expenses ***Sub-Total***	***$ 32,980***
	FMD Overhead (26.5% of Expenses)	$ 8,740
	Insurance (.0610 per $100 of combined building and content/equipment value of $5,000,000.	$ 3,050
	*** Janitorial services	
	Capital Reserves	To be determined
	TOTAL =	***$ 44,770***
	PER SQUARE FT =	**$ 2.00**

DISCLAIMER

* Refuse service excludes bio hazardous waste disposal, pick up or filtration.
** No emergency generator exists.
*** No janitorial service provided for either the offices or laboratory, by Pima County.

2.5 Janitorial Services

Janitorial services will not be a part of the lease with Pima County. The estimated contract for these services is based on the cost for the existing ROMP-CLC which has been prorated by area. The estimated annual cost for janitorial services for the new wing is $21,600.

2.6 Water and Sewer

It is difficult at this stage of the project to estimate water consumption along with the associated sewer usage. At present we are using an annual consumption estimate of 1,500 ccf (1,122,000 gallons). The cost estimates for water and sewer services can be easily updated if necessary.

Water Rate (Tucson Water)

The following table lists the charges associated with water service as well as the estimated annual consumption and costs. Note that reclaimed water *has not* been included at this time.

Tucson Water Cost Estimate

Charge	Unit	Qty	Unit Cost	Total
Monthly Service Charge	month	12	$ 66.64	$ 800
Usage Charge	ccf	1,500	$ 2.25	$ 3,375
CAP Charge	ccf	1,500	$ 0.36	$ 540
Conservation Charge	ccf	1,500	$ 0.07	$ 105
Fire Sprinkler Rates	month	12	$ 20.76	$ 249
				$ 5,069

Sewer Rate (Pima County Sewer)

The following table lists the charges associated with sewer service. The consumption values correspond with the estimated water consumption.

Pima County Sewer Cost Estimate

Charge	Unit	Qty	Unit Cost	Total
Monthly Service Charge	month	12	$ 12.63	$ 152
Usage Charge	ccf	1,500	$ 4.40	$ 6,606
				$ 6,758

2.7 Conclusion

This study attempts to provide a realistic estimate of O&M costs for the proposed wing at West Lab. Energy consumption and costs were developed using computer simulation based on inputs from the County and the design team. Water consumption estimate assumes consumption of125 ccf/month. The actual consumption for utilities could vary depending on system operation, occupancy, schedules, laboratory operation, the weather, etc. In addition to estimating utility consumption and costs the Pima County Facilities Management office provided an estimate for O&M costs. The following table

shows the breakdown of annual cost and cost per square foot for all utilities, and for other O&M items. Once again this estimate does not include the actual lease cost.

Breakdown of Annual Cost & Annual Cost/SF

Component	Cost	Cost/SF
All Utilities	$ 112,235	$ 5.01
Facilities	$ 66,370	$ 2.00
TOTAL	***$ 178,605***	***$ 7.01***

3 Building Energy Modeling

3.1 Disclaimer

The information presented in this report and any attached appendices and documents is for the purpose of guidance and assistance in design only. This information is not to be used for design decisions without further engineering analysis. This document may contain information and specifics regarding products, equipment, manufacturers, and distributors and should not be considered as an endorsement by HDR Architecture Inc.

The results included herein are generated from software that uses calculation algorithms and formulas based on industry adopted methods. The results may differ from actual conditions.

3.2 Executive Summary

The purpose of this report is to present the results of the preliminary energy analysis conducted for the West Lab project. This report provides aggregate information on the energy cost and trends of the various end-uses in the proposed-design building. This report is based on the analysis of the proposed building as per the design drawings and mechanical, electrical narrative provided by the team. Table 1 is a snapshot of the performance of the proposed building simulation case based on the design information.

Proposed Design				
End Use	Total Energy	Total Cost	kBtu/SF/YR	$ / SF/YR
	MBTU	$		
Space Cool	594.61	$20,807.09	26.98	$0.94
Heat Reject.	0.00	$0.00	0.00	$0.00
Refrigeration	0.00	$0.00	0.00	$0.00
Space Heat	1140.63	$15,403.82	51.76	$0.70
HP Supp.	0.00	$0.00	0.00	$0.00
Hot Water	21.90	$293.46	0.99	$0.01
Vent. Fans	626.45	$21,921.38	28.43	$0.99
Pumps & Aux.	87.82	$3,072.93	3.99	$0.14
Ext. Usage	68.53	$2,398.15	3.11	$0.11
Misc. Equip.	840.72	$29,419.19	38.15	$1.34
Task Lights	0.00	$0.00	0.00	$0.00
Area Lights	202.66	$7,092.35	9.20	$0.32
Total	**3583.31**	**$100,408.38**	162.61	$4.56

Table 1 Energy Consumption and Cost Summary

Based on the analysis the proposed design has energy use index (EUI) of 162.6 kBtu/ sf-yr and has energy cost of $4.56/sf-yr cost.

3.3 Modeling Methodology

The energy analysis of this project was performed using accepted, standard engineering calculation procedures and the computer program eQuest, which is an interface to the DOE 2.2 energy simulation engine. DOE-2.2 is the latest privately supported extension of DOE-2, the microcomputer version of DOE-2. eQuest is a program designed to determine the energy consumption behavior of proposed and existing buildings utilizing an hour-by-hour simulation procedure.

Although every attempt has been made to model the actual building conditions that will exist when construction is complete and while DOE-2 is generally accepted as the most accurate energy simulation program available, the predicted energy consumption should not be interpreted as an absolute prediction of the actual usage. Actual conditions may differ from the original assumptions due to unpredictable variables such as changes in occupancy schedules, equipment selection and installation, building construction and operation, and weather variations from a typical year. A computer model is developed from design plans and specifications provided by the design team to define the energy performance. This model is referred to as the "proposed case" or "as designed" model in the analysis.

3.4 Project Description

The proposed West Lab project is a 22,036 sq ft. (approximately) building in Tucson, Arizona. The project scope consists of laboratory (high bay and general laboratory) and office wing. The building consists of private offices, graduate student offices, break room, conference rooms, high bay laboratory, general laboratory spaces and other support areas such as mechanical room and storage areas.

Operation

This building is operated on a year round basis from 7am to 5pm Monday through Friday. It will be used only during regular business hours and not on weekends or holidays.

Exterior Walls

The exterior façade of the building consist of 8"CMU (solid grouted) on steel studs 24" on center with R-13 insulation, and finished with gyp board.

Wall Construction U-Value = 0.106 Btu/h-SF-^{0}F

Roofs

The building roof construction consists of a build up roof with R-20 continuous insulation above deck. Roof Construction U-Value = 0.047 Btu/h-SF-^{0}F

Glass

The project includes a high efficiency double pane low-e glass with the following properties –

Assembly U-value – 0.36 Btu/h-SF-^{0}F (Center-of-glass U-Value – 0.29 Btu/h-SF-^{0}F)

Shading Coefficient (SC) – 0.30

Visible Light Transmission (Tvis) – 0.4 (40%)

Floors

The floor has been modeled as unheated 6-inch concrete slab-on-grade.

Shades

Window shades and roof overhangs have been modeled for the design case model.

Interior Lighting

The space-by-space lighting method is used for defining the lighting power densities (LPD) in the model. For the laboratory spaces ASHRAE 90.1-2007 minimum LPD value has been used. For the office wing the lighting power densities are defined based on the previous energy model performed by Quest energy group. Occupancy sensors are assumed for almost all the spaces in the building and a 10% lighting power reduction is taken for the occupancy sensors as per AHSRAE 90.1-2007, Section G, Table G3.2. The overall installed lighting with occupancy sensors is 0.95 W/sf. For space-by-space lighting power densities please see table below.

Space Type	Occupancy Sensors	Lighting power density (LPD)	Lighting power density (LPD) with Occupancy sensors
Private Large Offices	Y	1.03 W/SF	0.93 W/SF
Private Prof. Offices	Y	1.14 W/SF	1.03 W/SF
Open Offices	Y	1.0 W/SF	0.9 W/SF
Restroom	Y	0.76 W/SF	0.69 W/SF
Conference Room	Y	1.36 W/SF	1.22 W/SF
Storage	N	0.8 W/SF	0.8 W/SF

Electrical / Mechanical	N	1.02 W/SF	1.02 W/SF
Lobby	N	0.59 W/SF	0.59 W/SF
Corridors	Y	0.54 W/SF	0.49 W/SF
Break Room	Y	0.81 W/SF	0.73 W/SF
Copy Room	Y	0.76 W/SF	0.68 W/SF
General Laboratory	Y	1.4 W/SF	1.26 W/SF
High Bay Laboratory	Y	0.8 W/SF	0.72 W/SF

Exterior Lighting

As the design is still in progress and exterior lighting information is not available therefore currently the design assumes 5KW exterior lighting in design.

Equipment (Plug Loads) -

The equipment power densities are defined by space-by-space method to accurately account for the correct plug loads. The below shown table indicates the equipment power densities considered in the project -

Space Type	Equipment power density (EPD)
Private Offices	1.0 W/SF
Open Offices	1.5 W/SF
Restroom	0.5 W/SF
Conference Room	1.0 W/SF
Storage	0.5 W/SF
Electrical / Mechanical	10 W/SF
Lobby and corridors	0.5 W/SF
Break Room	4 W/SF
Copy Room	2 W/SF
General Laboratory	3 W/SF
High Bay Laboratory	2.5 W/SF

HVAC- Water Side

The proposed design includes 2 (1 stand by) Air-cooled Screw chillers with 80-ton capacity each for meeting the chilled water needs for the project. Currently it is assumed that the chillers will have ASHRAE 90.1-2007 minimum efficiency of 2.8 COP. The chilled water system will include 2 (1 stand by) chilled water pumps with premium efficiency

constant speed control (assumed). The chilled water supply design temperature is assumed to be 44 F with 56F return water temperature.

2 (1 stand by) 500 MBH (each) Condensing Boilers with 92% efficiency will supply the hot water for space heating purposes. The hot water system will include 2 (1 stand by) hot water pumps with premium efficiency constant speed control (assumed). Both chilled water and hot water system will include outside air reset control to reset the supply temperature as per the outdoor dry-bulb conditions.

HVAC- Air Side

HVAC- Air Side	
HVAC System Type	**AHU-Office** Variable Air Volume system with Hot water reheat and chilled water cooling. **MAU-General lab** Make up air unit with chilled water cooling and hot water reheat. The system also includes a run-around sensible heat recovery loop (45% efficiency) to extract heat from the exhaust air stream. **AHU-High Bay Lab** Make-up air unit with Indirect / Direct evaporative cooling and hot water heating. **2-pipe fan Coil Units** – Two piped fan Coil units with cooling only serves the mechanical, control, electrical and telecommunication rooms. **4-pipe fan Coil Units** - Sensor lab and Aquatics lab Four piped fan Coil units serves the sensor lab and aquatic lab with different temperature set point requirements.
Economizer Control	AHU -Office includes it with 75F high limit
Humidity Control	Included for Office & general Lab AHU with 50% upper and 20% lower humidity control

Fan Volume	**AHU-Office-** Supply Air - 5200 CFM (5 HP Fan with VFD) Return Air - 3600 CFM (2.5 HP Fan with VFD) Outside Air - 1600 CFM **MAU-General lab** Supply Air - 7500 CFM (10 HP Fan with VFD) Exhaust Air - 10,000 CFM (2- 5 HP Fan with VFD) Outside Air - 7500 CFM **AHU-High Bay Lab** Supply Air - 7500 CFM (10 HP Fan with VFD) Return Air - 5200 CFM (3 HP Fan with VFD) Outside Air - 2300 CFM **2-pipe fan Coil Units total -** Supply Air - 2000 CFM (1.5 HP) Outside Air - 2300 CFM **4-pipe fan Coil Unit Sensor lab-** Supply Air - 3200 CFM (1.6 HP Fan) Outside Air - 3200 CFM **4-pipe fan Coil Unit Aquatics lab-** Supply Air - 1750 CFM (1 HP Fan) Outside Air - 1750 CFM
Temperature Set Points	**All spaces (except Sensor and Aquatics Lab)-** Heating Set point - 72 F Cooling Set point - 75 F **Sensor and Aquatics Lab-** Heating Set point - 68 F Cooling Set point - 72 F
Air flow rates for Labs	**General and High Bay Lab -** Occupied Time - 6 ACH Un-Occupied Time - 4 ACH

3.5 Energy Rates

The electricity rate scheduled is provided by the owner however the natural gas rate information was not available so the models assume the natural gas rate as per previous energy analysis performed by Quest energy group.

Electricity Rate (Tucson Electric Power – GS-10 Utility Rate)

Note the following charges include a 7.5% increase to account for the proposed rate increase.

Customer Charge - $ 14.0 / month

Base Power Supply Charge – Summer - $0.0339 / kWh, Winter - $0.0260 / kWh

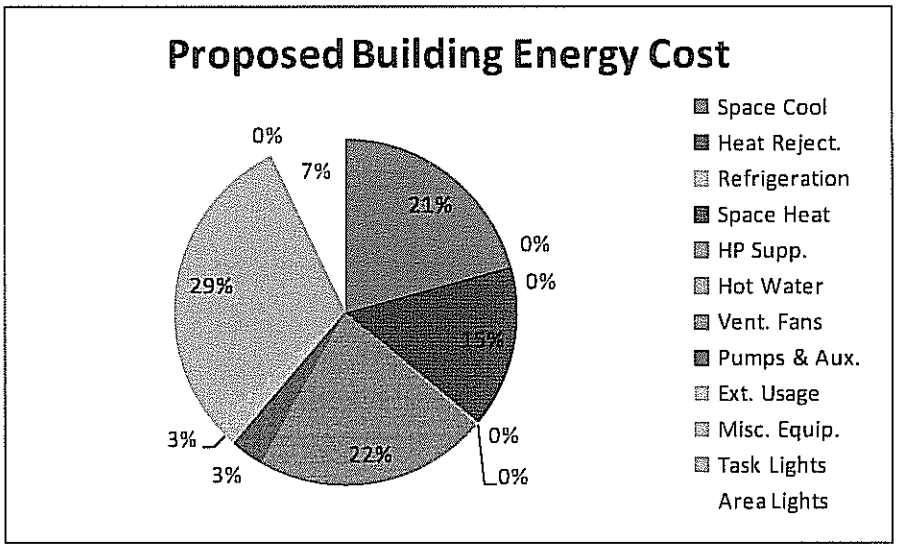
Delivery Charge -

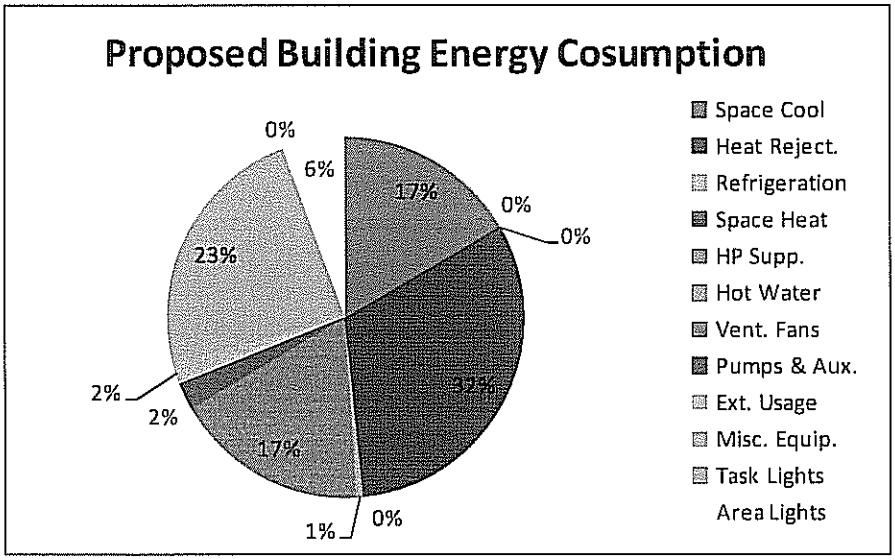
	Summer (May-Oct)	Winter (Nov – April)
First 500 kWh	$0.0605	$0.0551
All remaining kWhs	$0.0913	$0.0861

Natural Gas Rate - Uniform flat rate of $1.34/ Therm

3.6 Results and Analysis - Energy Consumption and Energy Costs

The following graphs and table presents the energy cost and energy consumption breakdown by end uses for the proposed building.





Proposed Design								
End Use	Electricity	Natural Gas	Electricity	Natural Gas	Total Energy	Total Cost	kBtu/SF/YR	$ / SF/YR
	kWh (x1000)	MBtu	$	$	MBTU	$		
Space Cool	174	0	20,807	0	594.61	$20,807.09	26.98	$0.94
Heat Reject.	0	0	0	0	0.00	$0.00	0.00	$0.00
Refrigeration	0	0	0	0	0.00	$0.00	0.00	$0.00
Space Heat	2	1,135	193	15,210	1140.63	$15,403.82	51.76	$0.70
HP Supp.	0	0	0	0	0.00	$0.00	0.00	$0.00
Hot Water	0	22	0	293	21.90	$293.46	0.99	$0.01
Vent. Fans	184	0	21,921	0	626.45	$21,921.38	28.43	$0.99
Pumps & Aux.	26	0	3,073	0	87.82	$3,072.93	3.99	$0.14
Ext. Usage	20	0	2,398	0	68.53	$2,398.15	3.11	$0.11
Misc. Equip.	246	0	29,419	0	840.72	$29,419.19	38.15	$1.34
Task Lights	0	0	0	0	0.00	$0.00	0.00	$0.00
Area Lights	59	0	7,092	0	202.66	$7,092.35	9.20	$0.32
Total	**711**	**1,157**	**84,905**	**15,504**	**3583.31**	**$100,408.38**	162.61	$4.56

3.7 Conclusion

Based on the energy modeling results we can conclude:

- For the proposed building the major energy uses are 1) space heating (32%) 2) receptacle and process loads (23%), 3) space cooling (17%), 4) ventilation fans (17%), and 5) area lighting (6%).
- Based on the analysis, the current proposed design has an EUI (energy use index) of 162.6 kBtu/sf-yr and has an energy cost of $4.56 /sf -yr

4 Cost Estimate

Compusult

Construction Cost Consulting
5923 East Pima Street
Tucson, Arizona 85712
520•882•4044 voice
520•323•0544 fax

Regional Wastewater
Reclamation Department

Statement of Probable Costs

Pima County Regional Waste Water Reclamation Department
ROMP Water & Energy Sustainability Center Addition

Tucson, Arizona

by Compusult, Inc.

August 24, 2012

Compusult applies diligence and judgment in locating and using reliable sources of information. This Statement of Probable Cost is made on Compusult's knowledge of the project and experience. Compusult has no control over the costs of labor, equipment or materials or over the contractor's method of pricing. Compusult makes no warranty expressed or implied as to the accuracy of such opinions as compared to the bid or actual costs.

Harold H. McGrath III, LCPE
Compusult, Inc.

Regional Wastewater Reclamation Department

Pima County Regional Wastewater Reclamation Department
ROMP Water & Energy Sustainability Center Addition

Tucson, Arizona

Concept Estimate

August 24, 2012

Summary of Project Costs			Total GSF Building Cost	22,100 Building Cost/SF
1. Substructure			$105,400	$4.77
2. Superstructure			$222,900	$10.09
3. Exterior Closure			$254,700	$11.52
4. Roofing			$140,800	$6.37
5. Interior Construction			$146,700	$6.64
6. Interior Finishes			$129,200	$5.85
7. Building Specialties			$18,900	$0.86
8. Equipment			$211,700	$9.58
9. Furnishings			$5,600	$0.25
10. Special Construction			$0	$0.00
11. Conveying Systems			$0	$0.00
12. Plumbing			$170,500	$7.71
13. Fire Protection			$56,700	$2.57
14. H.V.A.C.			$1,387,900	$62.80
15. Electrical			$676,500	$30.61
A. Building Construction			**$3,527,500**	**$159.62**
B. Site work			$215,500	$9.75
C. Subtotal			**$3,743,000**	**$169.37**
D. Contingency	10.00%	of Line C	$374,300	$16.94
E. General Conditions	7.00%	of Line C + D	$288,200	$13.04
F. Contractor's Fee	3.00%	of Line C+D+E	$132,200	$5.98
G. Bonds & Insurance	1.50%	of Line C+D+E+F	$68,100	$3.08
H. Tax	5.92%	of Line C+D+E+F+G	$272,400	$12.33
I. Total Construction Cost w/o Escalation			**$4,878,200**	**$220.73**

UofA West Lab Alternate #1 (Includes Markups) **$194,400**

ROMP Water & Energy Sustainability Center Addition

Loc: Tucson, Arizona
Job #: 12031
Project Size: 22100 SQFT
Estimator: T. McGrath, CPE

Compusult
5923 East Pima Street
Tucson AZ 85712
Phone: (520)882-4044

RptLine No	ItemCode	Description	Quantity	UM	Lab.Unit	Mat.Unit	Eqp.Unit	Sub.Unit	Tot.UnitCost	TotalCost
Site Work										
SITE WORK										
SITE PREPARATION										
GENERAL DEMOLITION										
1	0202.015	REMOVE EXISTING IMPROVEMENTS	1	LSUM				10,800.000	10,800.000	10,800
**** Total GENERAL DEMOLITION										10,800
SITE EARTHWORK										
2	0221.003	BUILDING PAD - DIRT OFCI	3,523	CUYD	2.2491		4.968		7.892	27,803
3	0221.004	DETENTION BASIN	191	CUYD	1.3608		3.750		5.519	1,054
**** Total SITE EARTHWORK										28,857
*** Total SITE PREPARATION										39,657
SITE IMPROVEMENTS										
ACCESS ROADS										
4	0265.042	SOIL CEMENT FIRE LANE	4,158	SQFT				4.950	4.950	20,582
**** Total ACCESS ROADS										20,582
PARKING LOTS										
5	0261.010	4" COMPACTED LOCAL GRAVEL	2,389	SQYD	2.5938	3.375	0.074		6.820	16,294
6	0261.063	2" ASPHALT WEARING COURSE	2,389	SQYD	2.5281	4.651	0.072		8.009	19,134
7	0261.080	STRIPE PARKING LINES	538	LNFT	0.1620	0.135	0.005		0.350	188
**** Total PARKING LOTS										35,617
CURBS & GUTTERS										
8	0262.065	CURB	1,087	LNFT				12.600	12.600	13,696
**** Total CURBS & GUTTERS										13,696
SIDEWALKS, STAIRS & TERRACES										
9	0330.135	GRAY SIDEWALK	864	SQFT				5.175	5.175	4,471
10	0330.136	TRUNCATED CONES @ WALK	32	SQFT				22.500	22.500	720
11	0330.140	HEADER @ PAVERS	121	LNFT				13.500	13.500	1,634
12	0420.130	PAVERS	906	SQFT				13.950	13.950	12,639
**** Total SIDEWALKS, STAIRS & TERRACES										19,463
FENCES & GATES										
13	0271.110	NEW FENCE AND GATES	1	LSUM				6,300.000	6,300.000	6,300
**** Total FENCES & GATES										6,300
SITE DEVELOPMENT										
14	0274.000	SITE DEVELOPMENT	1	LSUM				9,000.000	9,000.000	9,000
**** Total SITE DEVELOPMENT										9,000
CONCRETE PAVING										
15	0265.010	CONCRETE APRON	444	SQFT				7.650	7.650	3,397
**** Total CONCRETE PAVING										3,397
LANDSCAPE & IRRIGATION										
16	0280.000	LANDSCAPING ALLOWANCE	1	LSUM				10,800.000	10,800.000	10,800
**** Total LANDSCAPE & IRRIGATION										10,800
SITE FURNISHINGS										
17	0270.010	SITE FURNISHINGS	1	LSUM				4,950.000	4,950.000	4,950
**** Total SITE FURNISHINGS										4,950
*** Total SITE IMPROVEMENTS										123,605
SITE UTILITIES										
STORM DRAINAGE SYSTEMS										
18	0251.150	CATCH BASIN	4	EACH				675.000	675.000	2,700
19	0251.151	24" STORM PIPE	329	LNFT				40.500	40.500	13,325
**** Total STORM DRAINAGE SYSTEMS										16,025
*** Total SITE UTILITIES										16,025
** Total SITE WORK										179,487
ELECTRICAL SYSTEMS										
POWER DISTRIBUTION										
LIGHTING BRANCH										
20	1601.200	Lighting Branch	1	Lsum				5,400.000	5,400.000	5,400
**** Total LIGHTING BRANCH										5,400
*** Total POWER DISTRIBUTION										5,400
LIGHTING										
H.I.D. LIGHTING										
21	1643.200	H.I.D. Lighting	1	Lsum				10,800.000	10,800.000	10,800
**** Total H.I.D. LIGHTING										10,800
*** Total LIGHTING										10,800
COMMUNICATIONS										
TELEPHONE SYSTEMS										
22	1610.200	Telephone Systems - R.I.	1	Lsum				6,300.000	6,300.000	6,300
**** Total TELEPHONE SYSTEMS										6,300
*** Total COMMUNICATIONS										6,300
PRIMARY POWER										
ELECTRICAL UTILITIES										
23	1601.200	Primary Power	1	Lsum				13,500.000	13,500.000	13,500
**** Total ELECTRICAL UTILITIES										13,500
*** Total PRIMARY POWER										13,500
** Total ELECTRICAL SYSTEMS										36,000
* Total Site Work			1	LSUM	20,506.8672	19,247.222	18,567.633	151,012.800	215,486.582	215,487

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Phone: (520)882-4044

RptLine No	ItemCode	Description	Quantity	UM	Lab.Unit	Mat.Unit	Eqp.Unit	Sub.Unit	Tot.UnitCost	TotalCost
ROMP Water & Energy Sustainability Center Addition										
SUBSTRUCTURE										
STANDARD FOUNDATIONS										
WALL FOUNDATIONS										
24	0222.100	MACH EXCAV CONTINUOUS FTG	206	CUYD	3.9785		1.920		7.092	1,461
25	0222.101	HAND EXCAV CONTINUOUS FTG	10	CUYD	33.4797				43.524	435
26	0222.130	MACH BACKFILL CONTINUOUS FTG	174	CUYD	7.4925		3.656		13.396	2,331
27	0311.110	S/S CONT FTG EDGE FORM	881	SQFT	2.2315	0.613			3.513	3,095
28	0321.100	RE-STEEL @ CONTINUOUS FTG	34	CWT	14.1600	58.500			76.908	2,615
29	0331.100	**CONC IN CONTINUOUS FOOTING**		****						
30	0331.104	3000 PSI W/PUMP	54	CUYD	6.9984	76.500	10.440		96.038	5,186
31	0402.003	8" MASONRY FNDN WALL	1,634	SQFT	2.2327	4.658			7.560	12,353
**** Total WALL FOUNDATIONS										27,477
COLUMN FOUNDATIONS										
32	0222.110	MACH EXCAV COLUMN FTG	23	CUYD	4.1816		2.018		7.454	171
33	0222.111	HAND EXCAV COLUMN FTG	2	CUYD	33.4797				43.524	87
34	0222.140	MACH BACKFILL @ COLUMN FTG	19	CUYD	7.4925		3.656		13.396	255
35	0311.120	S/S COLUMN FGT EDGE FORM	103	SQFT	2.3841	0.435			3.534	364
36	0321.110	RE-STEEL @ COLUMN FOOTING	5	CWT	11.5654	58.500			73.535	368
37	0331.150	**CONC IN COLUMN FOOTING**		****						
38	0331.154	3000 PSI W/PUMP	6	CUYD	6.9984	76.500	10.440		96.038	576
**** Total COLUMN FOUNDATIONS										1,821
*** Total STANDARD FOUNDATIONS										29,297
SLAB ON GRADE										
STANDARD SLAB ON GRADE										
39	0222.001	FINE GRADE FLOOR BY HAND	21,412	SQFT	0.1107		0.021		0.165	3,522
40	0222.022	ABC GRAVEL SLAB FILL	275	CUYD	3.3267	7.425	1.623		13.373	3,678
41	0225.000	SUBSOIL TERMITE TREATMENT	21,412	SQFT				0.288	0.288	6,167
42	0301.019	TROWEL CEMENT FINISH	21,412	SQFT	0.2026	0.032	0.006		0.301	6,449
43	0301.300	CONTROL JOINT	2,111	LNFT	0.2894	0.054			0.430	908
44	0311.300	SS FLOOR EDGE W/1.5 BM/SF	179	SQFT	1.9238	0.457			2.958	529
45	0320.002	RE-STEEL @ SLAB ON GRADE	107	CWT	14.0391	58.500			76.751	8,212
46	0330.185	6" CURB	153	LNFT				13.950	13.950	2,134
47	0330.185	TRENCH DRAIN	104	LNFT				58.500	58.500	6,084
48	0330.196	COLUMN DIAMOND	6	EACH				292.500	292.500	1,755
49	0331.300	**CONC IN SLAB ON GRADE**		****						
50	0331.306	3000 PSI W/PUMP	380	CUYD	5.8275	76.500	8.693		92.769	35,252
51	0719.001	POLYETHELENE V.B. 6 MIL	216	SQS	3.7607	1.557			6.446	1,392
**** Total STANDARD SLAB ON GRADE										76,083
*** Total SLAB ON GRADE										76,083
** Total SUBSTRUCTURE										105,381
SUPERSTRUCTURE										
VERTICAL SUPPORT										
COLUMNS										
52	0510.004	STRUCTURAL PLATES	3	CWT	9.2697	121.500	3.757		137.333	412
53	0510.007	STRUCTURAL TUBING	30	CWT	8.8002	125.550	2.979		139.969	4,199
54	0510.009	ANCHOR BOLTS	24	EACH	6.5250	13.275			21.758	522
**** Total COLUMNS										5,133
*** Total VERTICAL SUPPORT										5,133
SUSPENDED FLOOR CONSTRUCTION										
BALCONY CONSTRUCTION										
55	0510.500	MEZZANINE	1,152	SQFT				14.850	14.850	17,107
**** Total BALCONY CONSTRUCTION										17,107
*** Total SUSPENDED FLOOR CONSTRUCTION										17,107
ROOF CONSTRUCTION										
FLAT ROOF CONSTRUCTION										
56	0501.051	MISC. SUPPORT FRAMING	21	CWT	6.9429	125.550	4.800		139.376	2,927
57	0510.000	STRUCTURAL I BEAMS	155	CWT	5.5716	121.500	2.105		130.848	20,281
58	0510.003	STRUCTURAL ANGLES	50	CWT	6.1849	121.500		2.979	132.519	6,626
59	0520.006	STEEL JOIST SERIES K	349	CWT	4.6035	105.300			111.285	38,838
60	0520.011	CHANNEL BRIDGING FOR JOIST	35	CWT	6.1849	117.450			125.490	4,392
61	0530.041	1-1/2X20 GA MTL DECK GALV	21,255	SQFT	0.2430	1.755			2.071	44,017
**** Total FLAT ROOF CONSTRUCTION										117,082
CANOPIES										
62	0550.030	ENTRY TRELLIS	450	SQFT				22.788	22.788	10,255
63	0550.040	CANOPY ABOVE WINDOWS	457	LNFT				20.484	20.484	9,361
64	0550.050	OVERHEAD SHADE STRUCTURE	3,895	SQFT				16.425	16.425	63,975
**** Total CANOPIES										83,591
*** Total ROOF CONSTRUCTION										200,673
** Total SUPERSTRUCTURE										222,913
EXTERIOR CLOSURE										
EXTERIOR WALLS										
EXTERIOR WALL CONSTRUCTION										
65	0402.102	8" COLORED CMU	13,473	SQFT	3.8250	5.907			10.879	146,575
66	0402.205	COLORED SILL BLOCK	215	LNFT				13.500	13.500	2,903
67	0720.062	6" BATT INSULATION R19 KRAFT	12,484	SQFT	0.1249	0.351			0.513	6,409
68	0925.004	5/8" FIRECODE GYPSUM BOARD	12,484	SQFT	0.3151	0.269			0.679	8,473
69	0925.078	3 5/8" 20 GA GALV STUDS @ 16"	12,484	SQFT	0.5840	0.570			1.329	16,590
70	0927.000	TAPE & FINISH DRYWALL WALL	12,484	SQFT	0.1857	0.052			0.294	3,665
71	0992.001	SEAL MASONRY WALL	13,473	SQFT	0.2637	0.315			0.658	8,863
**** Total EXTERIOR WALL CONSTRUCTION										193,478
*** Total EXTERIOR WALLS										193,478
EXTERIOR DOORS & WINDOWS										
EXTERIOR DOORS										
72	0801.000	HOLLOW METAL DOORS		****						

ROMP Water & Energy Sustainability Center Addition

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Tucson AZ 85712
Phone: (520)882-4044

RptLine No	ItemCode	Description	Quantity	UM	Lab.Unit	Mat.Unit	Eqp.Unit	Sub.Unit	Tot.UnitCost	TotalCost
73	0801.021	1-3/4" 18 GAUGE		****						
74	0801.022	3070 DOOR	6	EACH	67.3920	259.155			346.765	2,081
75	0802.020	16 GUAGE HOLLOW METAL		****						
76	0802.021	6070 FRAME	1	EACH	22.4640	180.000			209.203	209
77	0802.021	3070 FRAME	4	EACH	22.4640	159.750			188.953	756
78	0871.024	FINISH HARDWARE ALLOWANCE	4	OPNG		270.000			270.000	1,080
79	0871.026	FINISH HARDWARE ALLOWANCE	1	OPNG		450.000			450.000	450
80	0896.021	VIEW LITE	6	EACH				148.500	148.500	891
81	0990.008	PAINT EXTERIOR DOOR	6	SIDE	20.6300	3.600			30.419	183
82	0990.031	PAINT INTERIOR DOOR	6	SIDE	18.7200	5.400			29.736	178
**** Total EXTERIOR DOORS										5,828
		SPECIAL DOORS								
83	0831.200	MANUAL OPERATED OH DOOR	2	EACH				1,222.200	1,222.200	2,444
84	0831.230	ELECT DOOR OPERATOR ADD	2	EACH				1,012.500	1,012.500	2,025
**** Total SPECIAL DOORS										4,469
		ENTRANCES & STOREFRONTS								
85	0885.100	ALUMINUM STOREFRONT	92	SQFT				40.500	40.500	3,726
86	0885.200	SINGLE ALUM GLASS DOOR & FR	1	EACH				1,170.000	1,170.000	1,170
87	0885.205	PAIR ALUM GLASS DOOR	2	EACH				2,340.000	2,340.000	4,680
**** Total ENTRANCES & STOREFRONTS										9,576
		WINDOWS								
88	0885.101	AL PUNCHED WINDOWS	1,148	SQFT				36.000	36.000	41,328
**** Total WINDOWS										41,328
*** Total EXTERIOR DOORS & WINDOWS										61,201
** Total EXTERIOR CLOSURE										254,679
		ROOFING								
		ROOF COVERINGS								
		ROOFING MEMBRANES								
89	0751.001	MODIFIED BITUMEN ROOFING	22,109	SQFT	0.9297	1.726			2.935	64,886
**** Total ROOFING MEMBRANES										64,886
		ROOF INSULATION								
90	0755.000	1/2" FIBREBOARD INSULATION	22,109	SQFT	0.1608	0.225			0.434	9,596
91	0756.026	4" POLYISO ROOF INSULATION	22,109	SQFT	0.2147	1.710			1.989	43,977
**** Total ROOF INSULATION										53,573
		FLASHING & SHEETMETAL TRIM								
92	0330.910	CONC PILASTER COVER	72	SQFT				9.450	9.450	680
93	0762.039	24 GA GALV IRON SHEETMETAL	779	LNFT	2.3035	5.355			8.350	6,504
94	0762.040	GUTTER	314	LNFT				11.250	11.250	3,533
95	0762.041	DOWNLEADER	195	LNFT				9.450	9.450	1,843
**** Total FLASHING & SHEETMETAL TRIM										12,560
		CAULKING & SEALANTS								
96	0763.061	CAULKING	1	EACH				4,972.500	4,972.500	4,973
**** Total CAULKING & SEALANTS										4,973
		ROOF ACCESSORIES								
97	0340.002	PC SPLASH BLOCK	5	EACH	11.2500	40.500			55.125	276
98	0551.035	STEEL LADDER W/OUT CAGE	36	LNFT	8.1000	37.800			48.330	1,740
99	0612.011	2X BLOCKING @ ROOF	779	LNFT	0.1260	0.279			0.443	345
100	0781.200	ROOF HATCH	2	EACH	53.3353	1,165.500			1,234.836	2,470
**** Total ROOF ACCESSORIES										4,830
*** Total ROOF COVERINGS										140,822
** Total ROOFING										140,822
		INTERIOR CONSTRUCTION								
		PARTITIONS								
		FIXED PARTITIONS								
101	0402.101	8" GRAY SMOOTH CMU	1,505	SQFT	2.6134	5.243			8.640	13,003
102	0611.003	MISC WOOD BLOCKING @ PARTITION	555	BDFT	1.2856	0.342			2.013	1,117
103	0720.051	3 1/2" BATT INSUL R-11 KRAFT	25,384	SQFT	0.1108	0.225			0.369	9,368
104	0925.004	5/8" FIRECODE GYPSUM BOARD	41,785	SQFT	0.3151	0.269			0.679	28,361
105	0925.070	7/8" FURRING CHANNEL @ 16"OC	1,505	SQFT				0.491	0.491	738
106	0925.080	6" 20 GA GALV STUDS @ 16"	25,384	SQFT	0.6318	0.756			1.577	40,039
107	0927.000	TAPE & FINISH DRYWALL WALL	39,033	SQFT	0.1857	0.052			0.294	11,460
108	0927.050	COLUMN CLOSURE	2	EACH				382.500	382.500	765
**** Total FIXED PARTITIONS										104,852
		INTERIOR DOORS & FRAMES								
109	0801.000	HOLLOW METAL DOORS		****						
110	0801.021	1-3/4" 18 GAUGE		****						
111	0801.022	3070 DOOR	27	EACH	67.3920	259.155			346.765	9,363
112	0802.020	16 GUAGE HOLLOW METAL		****						
113	0802.021	6070 FRAME	6	EACH	22.4640	220.500			249.703	1,498
114	0802.021	3070 FRAME	35	EACH	22.4640	159.750			188.953	6,613
115	0821.000	SOLID CORE WOOD DOORS		****						
116	0821.021	1-3/4" BIRCH VENEER		****						
117	0821.022	3070 DOOR	20	EACH	67.3920	183.555			271.165	5,423
118	0871.023	FINISH HARDWARE ALLOWANCE	35	OPNG		225.000			225.000	7,875
119	0871.026	FINISH HARDWARE ALLOWANCE	6	OPNG		360.000			360.000	2,160
120	0871.026	MAG LOCK W/ CARDREADER	2	OPNG		585.000			585.000	1,170
121	0896.020	1/2 DR VIEW LITE	6	EACH				337.500	337.500	2,025
122	0896.021	VIEW LITE	10	EACH				121.500	121.500	1,215
123	0990.031	PAINT INTERIOR DOOR	114	SIDE	18.7200	5.400			29.736	3,390
**** Total INTERIOR DOORS & FRAMES										40,732
		BORROWED LIGHTS								
124	0896.030	HM/GLAZING	50	SQFT				22.500	22.500	1,125
**** Total BORROWED LIGHTS										1,125
*** Total PARTITIONS										146,709

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RptLine No	ItemCode	Description	Quantity	UM	Lab.Unit	Mat.Unit	Eqp.Unit	Sub.Unit	Tot.UnitCost	TotalCost
		INTERIOR FINISHES								
		WALL FINISHES								
125	0931.011	CERAMIC TILE WALL	570	SQFT	3.7221	5.625			10.464	5,964
126	0982.002	EPOXY WALL FINISH	14,553	SQFT	0.1980	0.450			0.707	10,295
127	0990.061	PAINT PLASTER-GYP BD 3 CTS	237	SQS	17.4290	13.500			36.158	8,569
		****** Total WALL FINISHES**								**24,828**
		FLOOR FINISHES								
128	0931.002	CERAMIC TILE BASE	114	LNFT	2.9147	5.400			9.169	1,048
129	0931.010	CERAMIC TILE FLOOR	333	SQFT	2.8836	5.985			9.734	3,241
130	0965.010	VINYL COMPOSITION TILE	579	SQFT	0.2722	1.575			1.929	1,117
131	0965.020	4" RUBBER BASE	2,249	LNFT	0.6517	0.675			1.522	3,423
132	0967.000	SHEET VINYL FLOOR	5,548	SQFT	0.6804	3.825			4.710	26,128
133	0967.100	INTEGRAL SHEET VINYL BASE - 6"	1,272	LNFT	1.0692	2.520			3.910	4,973
134	0968.001	CARPET TILE	5,004	SQFT				3.096	3.096	15,492
135	0970.120	POLY SEAL CONC FLOOR	8,423	SQFT	0.1497	0.405			0.600	5,051
		****** Total FLOOR FINISHES**								**60,474**
		CEILING FINISHES								
136	0926.635	MTL STUD & GYPSUM SOFFIT	74	LNFT				23.400	23.400	1,732
137	0926.650	GYPSUM CEILING SYSTEM	1,572	SQFT				5.625	5.625	8,843
138	0950.006	2'X4' 3/4" MYLAR FACED TILE	4,308	SQFT	0.4233	1.350			1.900	8,186
139	0950.007	2'X4' 3/4" 2ND LOOK ACT	5,583	SQFT	0.4233	1.629			2.179	12,167
140	0990.064	PAINT PLAST-GYP BD CL 3 CT	16	SQS	18.7200	13.500			37.836	605
141	0992.111	PAINT EXPOSED STRUCTURE	8,423	SQFT	0.4361	0.302			0.869	7,322
		****** Total CEILING FINISHES**								**38,855**
		***** Total INTERIOR FINISHES**								**124,158**
		SPECIALTIES								
		CASEWORK & MILLWORK								
142	0622.115	SS VANITY TOP	13	LNFT	9.8968	76.500			89.366	1,162
143	0622.201	BASE CABINETS W/COUNTER	14	LNFT	8.3741	166.500			177.386	2,483
144	0622.202	WALL HUNG CABINETS	14	LNFT	9.8968	85.500			98.366	1,377
		****** Total CASEWORK & MILLWORK**								**5,022**
		***** Total SPECIALTIES**								**5,022**
		**** Total INTERIOR CONSTRUCTION**								**275,889**
		SPECIALTIES								
		CHALKBOARDS & TACKBOARDS								
		CHALKBOARDS & TACKBOARDS								
145	1010.101	TACK BOARD	117	SQFT				7.650	7.650	895
146	1010.103	GLASS MARKER BOARD	48	SQFT				40.050	40.050	1,922
		****** Total CHALKBOARDS & TACKBOARDS**								**2,817**
		***** Total CHALKBOARDS & TACKBOARDS**								**2,817**
		COMPARTMENTS & CUBICLES								
		TOILET PARTITIONS								
147	1018.010	TOILET COMPARTMENT	3	EACH				315.000	315.000	945
148	1018.012	HDCP TOILET COMPARTMENT	2	EACH				405.000	405.000	810
		****** Total TOILET PARTITIONS**								**1,755**
		TOILET & BATH ACCESSORIES								
149	1080.101	18" GRAB BAR	2	EACH	6.4038	32.400			40.725	81
150	1080.104	36" GRAB BAR	2	EACH	7.3557	40.680			50.242	100
151	1080.105	42" GRAB BAR	2	EACH	7.3557	42.300			51.862	104
152	1080.151	SURFACE MTD DOUBLE ROLL TPH	5	EACH	6.1159	14.904			22.855	114
153	1080.176	NAPKIN VENDOR	1	EACH	9.7200	169.000			201.636	202
154	1080.177	NAPKIN DISPOSAL	3	EACH	6.4038	19.800			28.125	84
155	1080.210	PAPER TOWEL DISPENSER	2	EACH	10.4677	22.500			36.108	72
156	1080.400	LIQUID SOAP DISPENSER	4	EACH	7.3557	15.633			25.195	101
157	1080.605	TLT SEAT COVER DISPENSER	5	EACH	7.7760	16.686			26.795	134
158	1080.607	ROBE HOOK	2	EACH	4.8600	6.156			12.474	25
159	1080.610	ELECTRIC HAND DRYER	2	EACH	9.7200	225.000			237.636	475
160	1080.648	S.S. MIRROR, 24"X 30"	4	EACH	13.1082	121.500			138.541	554
		****** Total TOILET & BATH ACCESSORIES**								**2,047**
		FIRE EXTINGUISHERS & CABINETS								
161	1052.000	FIRE EXTINGUISHER	4	EACH	3.6288	45.000			49.717	199
162	1052.010	FIRE EXTINGUISHER CAB	4	EACH	38.8800	67.500			118.044	472
		****** Total FIRE EXTINGUISHERS & CABINETS**								**671**
		***** Total COMPARTMENTS & CUBICLES**								**4,473**
		IDENTIFYING DEVICES								
		IDENTIFYING DEVICES								
163	1040.100	INTERIOR SIGNAGE	16	EACH				76.500	76.500	1,224
		****** Total IDENTIFYING DEVICES**								**1,224**
		***** Total IDENTIFYING DEVICES**								**1,224**
		MISCELLANEOUS SPECIALTIES								
		MISCELLANEOUS SPECIALTIES								
164	0553.043	6" CONC FILLED GUARD POST	8	EACH	60.7500	140.400			219.375	1,755
165	1026.100	CORNER GUARDS	23	EACH	7.8887	70.200			80.455	1,850
166	1026.101	WALL BUMPER/CHAIR RAIL	390	LNFT	2.2966	10.238			13.223	5,157
167	1026.102	WALL PROTECTION	242	SQFT				6.525	6.525	1,579
		****** Total MISCELLANEOUS SPECIALTIES**								**10,342**
		***** Total MISCELLANEOUS SPECIALTIES**								**10,342**
		**** Total SPECIALTIES**								**18,856**
		EQUIPMENT								
		MEDICAL & LABORATORY EQUIPMENT								
		LABORATORY EQUIPMENT								
168	1160.001	HOOD W/ CASEWORK	3	EACH	370.3847	6,010.000			8,491.500	25,475
169	1160.005	GLASSWASHERS	1	EACH				7,200.000	7,200.000	7,200
170	1160.007	DRYING RACK	6	EACH				608.400	608.400	3,650

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RptLine No	ItemCode	Description	Quantity	UM	Lab.Unit	Mat.Unit	Eqp.Unit	Sub.Unit	Tot.UnitCost	TotalCost
**** Total LABORATORY EQUIPMENT										35,325
		LABORATORY CASEWORK								
171	1160.101	ISLAND LAB BENCH	38	LNFT	47.0769	658.800			720.000	27,360
172	1160.102	BASE LAB BENCH W/ EPOXY TOP	192	LNFT	24.2308	351.000			382.500	73,440
173	1160.103	UPPER LAB CABINET	251	LNFT	21.4616	269.100			297.000	74,547
**** Total LABORATORY CASEWORK										175,347
*** Total MEDICAL & LABORATORY EQUIPMENT										211,672
		FOOD SERVICE EQUIPMENT								
		RESIDENTIAL FOOD SERVICE EQUIP.								
174	1145.150	REFRIGERATOR/FREEZER - OFOI								
175	1145.154	MICROWAVE - OFOI								
**** Total RESIDENTIAL FOOD SERVICE EQUIP.										
*** Total FOOD SERVICE EQUIPMENT										
** Total EQUIPMENT										211,672
		INTERIOR FURNISHINGS AND ACCESSORIES								
		WINDOW TREATMENT								
		BLINDS								
176	1250.100	SHADES	1,148	SQFT	0.3155	3.339			3.749	4,304
**** Total BLINDS										4,304
*** Total WINDOW TREATMENT										4,304
		FURNISHINGS								
		RUGS & MATTS								
177	1267.100	ENTRANCE MATS	126	SQFT	0.7889	9.000			10.026	1,263
**** Total RUGS & MATTS										1,263
*** Total FURNISHINGS										1,263
** Total INTERIOR FURNISHINGS AND ACCESSORIES										5,567
		MECHANICAL SYSTEMS								
		PLUMBING, STANDARD SYSTEMS								
		PLUMBING FIXTURES								
178	1542.000	Sink, Two Comp.	1	Each	197.9640	684.450			882.414	882
179	1542.000	Urinal	1	Each	247.4550	526.500			773.955	774
180	1542.000	Sink	1	Each	148.4730	36.855			185.328	185
181	1542.000	Lavatory CS	4	Each	148.4730	368.550			517.023	2,068
182	1542.000	Eyewash Shower	6	Each	395.9280	842.400			1,238.328	7,430
183	1542.000	Connect Lab Sink	8	Each	197.9640	52.650			250.614	2,005
184	1542.000	Water Closet	5	Each	148.4730	310.635			459.108	2,296
**** Total PLUMBING FIXTURES										15,640
		PLUMBING EQUIPMENT								
185	1544.000	HW Circ Pump	2	Each	197.9640	368.550			566.514	1,133
186	1544.000	Expansion Tank	2	Each	49.4910	210.600			260.091	520
187	1544.000	Water Heater, Gas Labs	1	Each	593.8920	2,632.500			3,226.392	3,226
188	1544.000	Water Heater, Gas	1	Each	593.8920	2,632.500			3,226.392	3,226
189	1544.000	Water Box	1	Each	49.4910	63.180			112.671	113
190	1544.000	Waste Sample Station	1	Each	296.9460	789.750			1,086.696	1,087
191	1544.000	Test & Flush	1	Lsum	4,949.1000	526.500			5,475.600	5,476
192	1544.000	Shock Absorber	1	Each	49.4910	89.505			138.996	139
193	1544.000	Roof Drain	10	Each	148.4730	221.130			369.603	3,696
194	1544.000	Backflow Preventer, 4	1	Each	395.9280	3,790.800			4,186.728	4,187
195	1544.000	Floor Sink	1	Each	98.9820	200.070			299.052	299
196	1544.000	Access Panel	2	Each	49.4910	63.180			112.671	225
197	1544.000	Fixture Carrier	6	Each	49.4910	126.360			175.851	1,055
198	1544.000	Floor Drain	2	Each	98.9820	173.745			272.727	545
199	1544.000	Electric Trap Primer	1	Each	98.9820	157.950			256.932	257
200	1544.000	Backflow Preventer, Small	2	Each	98.9820	263.250			362.232	724
201	1544.000	Hose Bibb	3	Each	24.7455	126.360			151.106	453
**** Total PLUMBING EQUIPMENT										26,362
		DOMESTIC COLD WATER PIPING								
202	1513.000	Domestic Cold Water Piping	500	Lnft	8.4135	9.477			17.891	8,945
**** Total DOMESTIC COLD WATER PIPING										8,945
		DOMESTIC HOT WATER PIPING								
203	1513.000	Eyewash Water Piping	270	Lnft	8.9084	9.477			18.385	4,964
204	1513.000	Domestic Hot Water Piping	560	Lnft	7.9186	7.898			15.816	8,857
205	1536.000	DHW Piping Insulation	560	Lnft		6.318			6.318	3,538
**** Total DOMESTIC HOT WATER PIPING										17,359
		WASTE AND VENT PIPING								
206	1513.000	Condensate Piping	240	Lnft	7.9186	9.477			17.396	4,175
207	1513.000	Rain Leader Piping	300	Lnft	22.7659	13.689			36.455	10,936
208	1513.000	Waste & Vent Piping	540	Lnft	13.8575	11.583			25.441	13,738
209	1536.000	Piping Insulation	240	Lnft		5.792			5.792	1,390
**** Total WASTE AND VENT PIPING										30,239
		NATURAL GAS PIPING								
210	1513.000	Natural Gas Piping	200	Lnft	8.9084	10.004			18.912	3,782
**** Total NATURAL GAS PIPING										3,782
*** Total PLUMBING, STANDARD SYSTEMS										102,329
		PLUMBING, SPECIAL SYSTEMS								
		INDUSTRIAL COLD WATER PIPING								
211	1513.000	Lab CW Piping	500	Lnft	8.9084	9.477			18.385	9,193
**** Total INDUSTRIAL COLD WATER PIPING										9,193
		INDUSTRIAL HOT WATER PIPING								
212	1513.000	Lab HW Piping	700	Lnft	7.9186	7.898			15.816	11,071
213	1536.000	Piping Insulation	700	Lnft		6.318			6.318	4,423
**** Total INDUSTRIAL HOT WATER PIPING										15,494
*** Total PLUMBING, SPECIAL SYSTEMS										24,687

ROMP Water & Energy Sustainability Center Addition

Loc: Tucson, Arizona
Job #: 12031
Project Size: 22100 SQFT
Estimator: T. McGrath, CPE

Compusult
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Tucson AZ 85712
Phone: (520)882-4044

RptLine No	ItemCode	Description	Quantity	UM	Lab.Unit	Mat.Unit	Eqp.Unit	Sub.Unit	Tot.UnitCost	TotalCost
		PLUMBING, PROCESS SYSTEMS (UHP)								
		RO WATER PIPING								
214	1513.000	RO Piping, Polypro	1,200	Lnft	17.3219	18.954			36.276	43,531
		**** Total RO WATER PIPING								43,531
		*** Total PLUMBING, PROCESS SYSTEMS (UHP)								43,531
		FIRE PROTECTION SYSTEMS								
		WET SPRINKLER SYSTEMS								
215	1559.000	Wet Sprinkler System	22,100	Sqft				2.565	2.565	56,687
		**** Total WET SPRINKLER SYSTEMS								56,687
		*** Total FIRE PROTECTION SYSTEMS								56,687
		H.V.A.C. WET SYSTEMS								
		WET EQUIPMENT								
216	1596.000	Test & Balance Systems	1	Lsum		36,855.000			36,855.000	36,855
217	1597.000	Air Quality Monitoring System	1	Lsum	1,187.7840	78,975.000			80,162.784	80,163
218	1597.000	Controls	220	Pts		760.000			760.000	167,200
219	1599.900	Water Treatment	1	Lsum		10,530.000			10,530.000	10,530
220	1599.900	Expansion Tank, Chilled	1	Each	1,187.7840	1,474.200			2,661.984	2,662
221	1599.900	Expansion Tank, Heating	1	Each	1,187.7840	1,158.300			2,346.084	2,346
222	1599.900	Fan Coils	6	Each	296.9460	1,842.750			2,139.696	12,838
223	1599.900	Heat Recovery Pump	2	Each	1,187.7840	1,895.400			3,083.184	6,166
224	1599.900	Heat Recovery w/ Fans, 7,000 CFM	1	Each	2,969.4600	40,014.000			42,983.460	42,983
225	1599.900	Heating Water Pump	2	Each	1,187.7840	2,316.600			3,504.384	7,009
226	1599.900	VFD's	8	Each	395.9280	4,212.000			4,607.928	36,863
227	1599.900	Chilled Water Pump	2	Each	1,187.7840	3,159.000			4,346.784	8,694
228	1599.900	Inertia Base	6	Each	296.9460	947.700			1,244.646	7,468
229	1599.900	Chiller, 80 Tons Air Cooled	2	Each	3,959.2800	58,968.000			62,927.280	125,855
230	1599.900	Commissioning	1	Lsum	17,816.7600	2,106.000			19,922.760	19,923
231	1599.900	Boilers, 500 MBH	2	Each	1,583.7120	8,950.500			10,534.212	21,068
232	1599.900	Air Seperator, HR	1	Each	1,187.7840	1,053.000			2,240.784	2,241
233	1599.900	Air Seperator, Heating	1	Each	1,187.7840	947.700			2,135.484	2,135
234	1599.900	Air Seperator, Chilled	1	Each	1,187.7840	1,263.600			2,451.384	2,451
235	1599.900	Air Handler, 7,000 CFM - Lab	2	Each	1,979.6400	36,855.000			38,834.640	77,669
236	1599.900	Air Handler, 5,000 CFM - Office	1	Each	1,583.7120	15,795.000			17,378.712	17,379
237	1599.900	Evaporative Cooler, 7,000 CFM	2	Each	1,187.7840	11,056.500			12,244.284	24,489
		**** Total WET EQUIPMENT								714,987
		CHILLED WATER PIPING								
238	1569.000	Chilled Water Piping	700	Lnft	74.2365	47.385			121.622	85,135
239	1569.000	Chilled Water Piping, T & C	600	Lnft	12.3727	3.422			15.795	9,477
240	1583.000	Chiller Water Insulation	700	Lnft		26.325			26.325	18,428
241	1583.000	Chiller Water Insulation, T & C	600	Lnft		6.529			6.529	3,917
		**** Total CHILLED WATER PIPING								116,957
		HEATING WATER PIPING								
242	1569.000	Heating Water Piping	2,500	Lnft	31.1793	12.899			44.079	110,197
243	1569.000	Heat Recovery Piping	300	Lnft	49.4910	31.590			81.081	24,324
244	1583.000	Heat Recovery Insulation	300	Lnft		26.325			26.325	7,898
245	1583.000	Heating Water Insulation	2,500	Lnft		12.320			12.320	30,800
		**** Total HEATING WATER PIPING								173,219
		*** Total H.V.A.C. WET SYSTEMS								1,005,163
		H.V.A.C. DRY SYSTEMS								
		DRY EQUIPMENT								
246	1599.900	Return Boot	60	Each	24.7455	52.650			77.396	4,644
247	1599.900	Water Heater flue	2	Each	395.9280	789.750			1,185.678	2,371
248	1599.900	Terminal Box w/RH	15	Each	197.9640	510.705			708.669	10,630
249	1599.900	Air Terminal Valve, Lab	12	Each	197.9640	842.400			1,040.364	12,484
250	1599.900	Supply Air Diffuser	120	Each	24.7455	78.975			103.721	12,446
251	1599.900	Spin-in	120	Each	10.8880	8.951			19.839	2,381
252	1599.900	Sidewall Grille	20	Each	37.1183	89.505			126.623	2,532
253	1599.900	Return Register	60	Each	24.7455	73.710			98.456	5,907
254	1599.900	Phoenix Exhaust Valve, SS	10	Each	247.4550	1,053.000			1,300.455	13,005
255	1599.900	Phoenix Exhaust Valve	10	Each	247.4550	816.075			1,063.530	10,635
256	1599.900	Manual Dampers	40	Each	74.2365	68.445			142.682	5,707
257	1599.900	Flex Duct	750	Lnft	3.0932	2.369			5.463	4,097
258	1599.900	Fire Smoke Damper	5	Each	296.9460	789.750			1,086.696	6,520
259	1599.900	Exhaust Grille	20	Each	49.4910	63.180			112.671	2,253
260	1599.900	Boiler Flue	2	Each	791.8560	2,106.000			2,897.856	5,796
261	1599.900	Clamps	210	Each		4.212			4.212	885
		**** Total DRY EQUIPMENT								102,294
		MEDIUM PRESSURE SUPPLY DUCT								
262	1593.000	MPSA Duct	15,000	Lbs	2.6231	1.769			4.392	65,882
263	1594.000	MPSA Insulation	10,750	Sqft		1.474			1.474	15,848
		**** Total MEDIUM PRESSURE SUPPLY DUCT								81,729
		LOW PRESSURE RETURN DUCT								
264	1593.000	LPRA Duct	9,000	Lbs	2.6231	1.769			4.392	39,529
265	1594.000	LPRA Insulation	6,300	Sqft		1.474			1.474	9,287
		**** Total LOW PRESSURE RETURN DUCT								48,816
		LOW PRESSURE SUPPLY DUCT								
266	1593.000	LPSA Duct	10,000	Lbs	2.6231	1.769			4.392	43,921
267	1594.000	LPSA Insulation	7,000	Sqft		1.474			1.474	10,319
		**** Total LOW PRESSURE SUPPLY DUCT								54,240
		OUTSIDE AIR DUCT								
268	1593.000	General Exhaust Duct	1,000	Lbs	2.6231	1.769			4.392	4,392
		**** Total OUTSIDE AIR DUCT								4,392
		ACID EXHAUST DUCT								
269	1593.000	Exhaust Plenum	800	Sqft	4.9491	7.898			12.847	10,277
270	1593.000	Lab Exhaust Duct, 316 SS	2,000	Lbs	2.6231	4.949			7.572	15,144
271	1593.000	Lab Exhaust Duct, Galv.	15,000	Lbs	2.6231	1.769			4.392	65,882

RptLine No	ItemCode	Description	Quantity	UM	Lab.Unit	Mat.Unit	Eqp.Unit	Sub.Unit	Tot.UnitCost	TotalCost
		****** Total ACID EXHAUST DUCT**								**91,303**
		***** Total H.V.A.C. DRY SYSTEMS**								**382,775**
		**** Total MECHANICAL SYSTEMS**								**1,615,171**
		ELECTRICAL SYSTEMS								
		POWER DISTRIBUTION								
		LIGHTING BRANCH								
272	1601.200	Lighting Branch	22,100	Sqft				1.890	1.890	41,769
		****** Total LIGHTING BRANCH**								**41,769**
		POWER BRANCH								
273	1601.200	Power Branch	22,100	Sqft				3.060	3.060	67,626
		****** Total POWER BRANCH**								**67,626**
		MOTOR BRANCH								
274	1601.200	Motor Branch	22,100	Sqft				1.215	1.215	26,852
		****** Total MOTOR BRANCH**								**26,852**
		FEEDERS								
275	1601.200	Feeders	22,100	Sqft				6.750	6.750	149,175
		****** Total FEEDERS**								**149,175**
		DEVICES								
276	1614.200	Devices	22,100	Sqft				1.800	1.800	39,780
		****** Total DEVICES**								**39,780**
		GROUNDING								
277	1608.200	Grounding	22,100	Sqft				2.070	2.070	45,747
		****** Total GROUNDING**								**45,747**
		***** Total POWER DISTRIBUTION**								**370,949**
		SECONDARY EQUIPMENT								
		SWITCHBOARDS								
278	1633.900	Switchboards	22,100	Sqft				1.890	1.890	41,769
		****** Total SWITCHBOARDS**								**41,769**
		PANELBOARDS								
279	1634.200	Panelboards	22,100	Sqft				3.465	3.465	76,577
		****** Total PANELBOARDS**								**76,577**
		TRANSFORMERS								
280	1639.200	Transformers	22,100	Sqft				1.800	1.800	39,780
		****** Total TRANSFORMERS**								**39,780**
		MOTOR CONTROL DEVICES								
281	1646.200	Motor Control Devices	22,100	Sqft				0.360	0.360	7,956
		****** Total MOTOR CONTROL DEVICES**								**7,956**
		MOTOR & EQUIPMENT CONNECTIONS								
282	1651.200	Motor & Equipment Connections	22,100	Sqft				0.108	0.108	2,387
		****** Total MOTOR & EQUIPMENT CONNECTIONS**								**2,387**
		***** Total SECONDARY EQUIPMENT**								**168,468**
		LIGHTING								
		FLOURESCENT LIGHTING								
283	1643.200	Flourescent Lighting	22,100	Sqft				2.610	2.610	57,681
		****** Total FLOURESCENT LIGHTING**								**57,681**
		H.I.D. LIGHTING								
284	1643.200	H.I.D. Lighting	22,100	Sqft				0.315	0.315	6,962
		****** Total H.I.D. LIGHTING**								**6,962**
		SPECIALITY LIGHTING								
285	1643.200	Specialty Lighting	22,100	Sqft				0.324	0.324	7,160
		****** Total SPECIALITY LIGHTING**								**7,160**
		EXIT LIGHTING								
286	1643.700	Exit Lighting	22,100	Sqft				0.162	0.162	3,580
		****** Total EXIT LIGHTING**								**3,580**
		LIGHTING CONTROL								
287	1644.500	Lighting Control	22,100	Sqft				0.270	0.270	5,967
		****** Total LIGHTING CONTROL**								**5,967**
		***** Total LIGHTING**								**81,350**
		SPECIAL SYSTEMS								
		FIRE ALARM SYSTEM								
288	1690.200	Fire Alarm System	22,100	Sqft				2.520	2.520	55,692
		****** Total FIRE ALARM SYSTEM**								**55,692**
		***** Total SPECIAL SYSTEMS**								**55,692**
		**** Total ELECTRICAL SYSTEMS**								**676,459**
		*** Total ROMP Water & Energy Sustainability Ce**	**22,100**	**SQFT**	**30.9433**	**81.385**	**0.300**	**43.914**	**159.611**	**3,527,410**

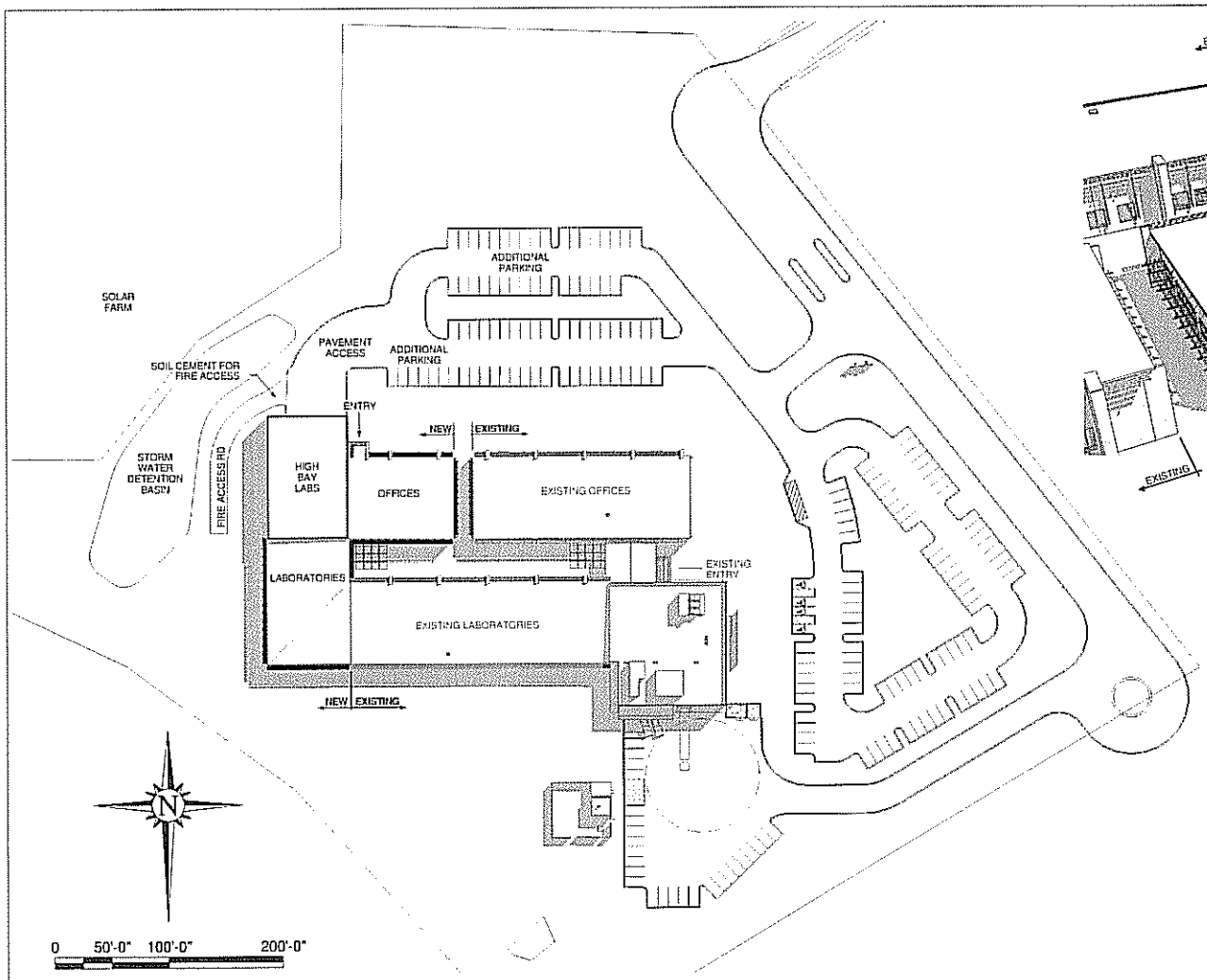
ROMP Water & Energy Sustainability Center Addition

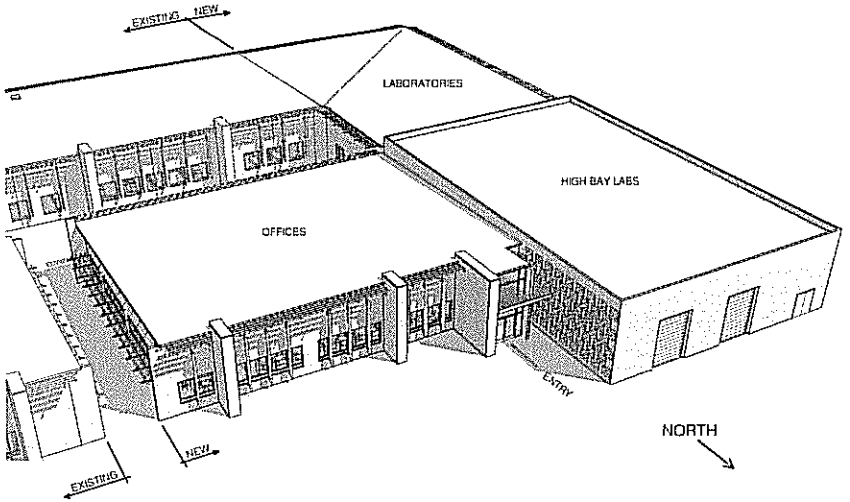
Loc: Tucson, Arizona
Job #: 12031
Project Size: 22100 SQFT
Estimator: T. McGrath, CPE

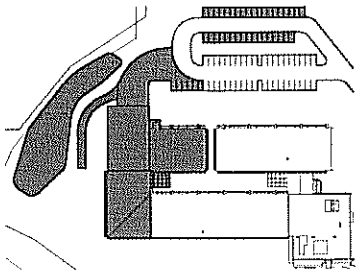
Compusult
5923 East Pima Street
Tucson AZ 85712
Phone: (520)882-4044

RptLine No	ItemCode	Description	Quantity	UM	Lab.Unit	Mat.Unit	Eqp.Unit	Sub.Unit	Tot.UnitCost	TotalCost
UofA Cost Items										
SITE WORK										
SITE UTILITIES										
SANITARY SEWER SYSTEMS										
289	0251.201	6" PVC EFFLUENT PIPE	1,800	LNFT				42.000	42.000	75,600
****** Total SANITARY SEWER SYSTEMS**										**75,600**
***** Total SITE UTILITIES**										**75,600**
**** Total SITE WORK**										**75,600**
SPECIALTIES										
MISCELLANEOUS SPECIALTIES										
MISCELLANEOUS SPECIALTIES										
290	1005.110	PROJECTION SCREEN ELEC OPER 8X10	1	EACH	106.6640	945.000			1,066.523	1,067
291	1005.111	PROJECTION SCREEN MAN 5X7	1	EACH	49.5000	472.500			536.850	537
****** Total MISCELLANEOUS SPECIALTIES**										**1,623**
***** Total MISCELLANEOUS SPECIALTIES**										**1,623**
**** Total SPECIALTIES**										**1,623**
EQUIPMENT										
MEDICAL & LABORATORY EQUIPMENT										
LABORATORY EQUIPMENT										
292	1160.001	HOOD W/ CASEWORK - OFCI	5	EACH	370.3847				481.500	2,408
293	1160.007	WALK-IN COOLER - OFCI	1	EACH	1,127.7692				1,466.100	1,466
294	1160.007	DRYING RACK	6	EACH				608.400	608.400	3,650
****** Total LABORATORY EQUIPMENT**										**7,524**
LABORATORY CASEWORK										
295	1160.101	ISLAND LAB BENCH - OFCI	32	LNFT	47.0769				61.200	1,958
296	1160.102	BASE LAB BENCH W/ EPOXY TOP - OFCI	133	LNFT	24.2308				31.500	4,190
297	1160.103	UPPER LAB CABINET - OFCI	186	LNFT	21.4616				27.900	5,189
****** Total LABORATORY CASEWORK**										**11,337**
***** Total MEDICAL & LABORATORY EQUIPMENT**										**18,861**
**** Total EQUIPMENT**										**18,861**
ELECTRICAL SYSTEMS										
COMMUNICATIONS										
TELEPHONE SYSTEMS										
298	1610.200	Telephone Systems - Rough-in Only	22,100	Sqft				2.115	2.115	46,742
299	1610.201	*** Cat 6A Cabling by UofA***						2.115	2.115	
****** Total TELEPHONE SYSTEMS**										**46,742**
***** Total COMMUNICATIONS**										**46,742**
SPECIAL SYSTEMS										
CCTV/SECURITY SYSTEM										
300	1611.200	Security System - R.I.	22,100	Sqft				0.288	0.288	6,365
****** Total CCTV/SECURITY SYSTEM**										**6,365**
***** Total SPECIAL SYSTEMS**										**6,365**
**** Total ELECTRICAL SYSTEMS**										**53,106**
*** Total UofA Cost Items**			1	LSUM	11,859.0715	1,417.500		132,356.700	149,190.993	149,191
Total Gross Cost										**3,892,087**

5 Drawings







NEW CONSTRUCTION KEY PLAN
SHADED REGIONS DESIGNATE NEW CONSTRUCTION

HDR ARCHITECTURE, INC.
5210 East Williams Circle Suite 530
Tucson, Arizona 85711

Schneider Associates Structural Engineers

Compusult
Compusult, Inc.
Construction Cost Consulting

STUDY SUBMITTAL
WEST LAB EXPANSION

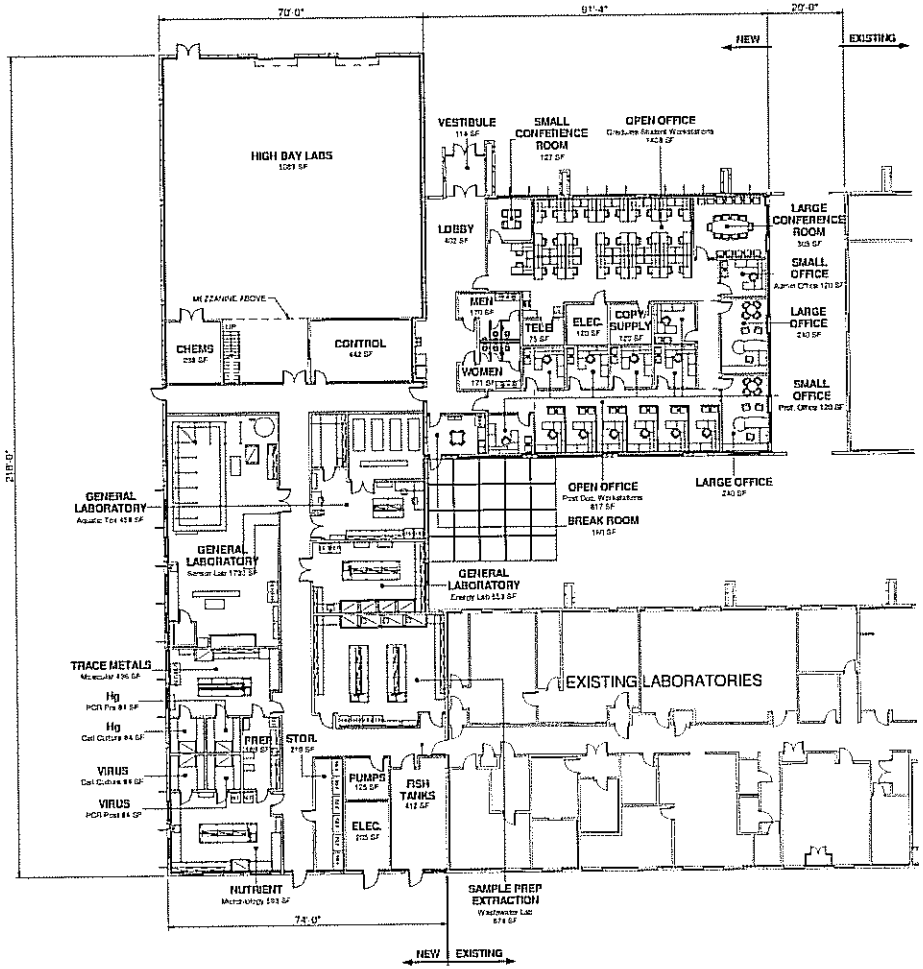
PIMA COUNTY
WATER RECLAMATION CAMPUS
3035 W. EL CAMINO DEL CERRO
TUCSON, AZ 85745

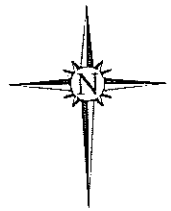
SITE PLAN AND AERIAL VIEW

SHEET NUMBER
A-01
08/16/2012

THE SEAL OF PIMA COUNTY ARIZONA

Regional Wastewater Reclamation Department





0 16'-0" 32'-0" 64'-0"

HDR ARCHITECTURE, INC.
5210 East Williams Circle Suite 230
Tucson, Arizona 85711

Schneider Associates Structural Engineers

Compusult
Compusult, Inc.
Construction Cost Consulting

STUDY SUBMITTAL
WEST LAB EXPANSION

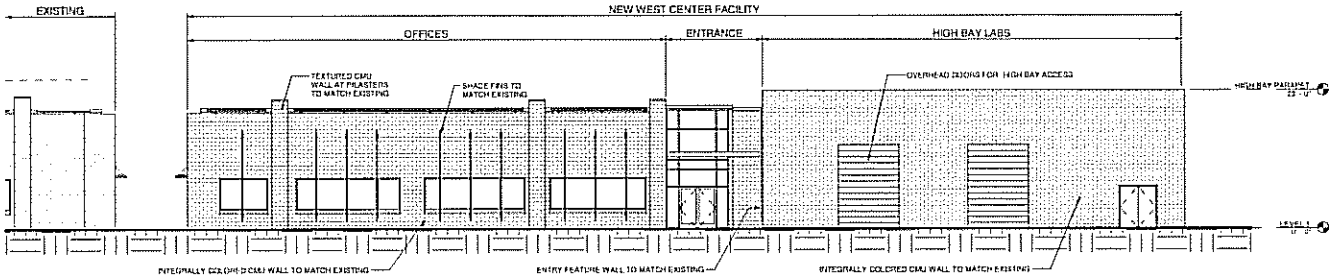
PIMA COUNTY
WATER RECLAMATION CAMPUS
3035 W. EL CAMINO DEL CERRO
TUCSON, AZ 85745

ENLARGED FLOOR PLAN

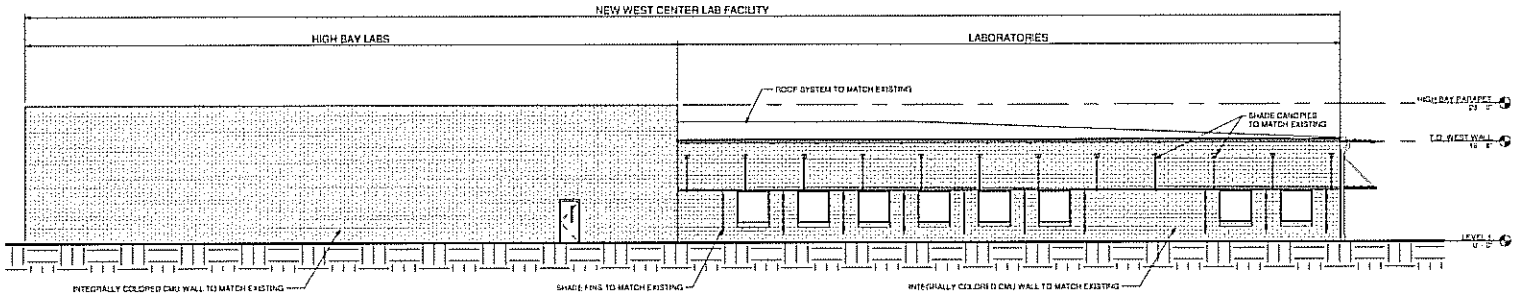
SHEET NUMBER
A-02
08/16/2012

The Seal of Pima County Arizona

Regional Wastewater Reclamation Department



NORTH ELEVATION



WEST ELEVATION

0 10'-0" 20'-0" 40'-0"

HDR ARCHITECTURE, INC.
5210 East Williams Circle Suite 530
Tucson, Arizona 85711

Schneider Associates Structural Engineers

Compusult
Compusult, Inc.
Construction Cost Consulting

STUDY SUBMITTAL
WEST LAB EXPANSION

PIMA COUNTY
WATER RECLAMATION CAMPUS
3035 W. EL CAMINO DEL CERRO
TUCSON, AZ 85745

ELEVATIONS

SHEET NUMBER
A-03
08/16/2012

The Board of Pima County Supervisors Arizona

Regional Wastewater Reclamation Department

6 Record of Discussions

ROD Number 2

Pima County
Tucson,AZ
WEST Lab
Client PO Number 10000
HDR Project: 11951-001158

Recorded By: Bill Wells
Location: ROMP CLC
Date / Time 7/19/2012 9:30 AM
Type: Meeting
Purpose kick-off meeting

Participants:

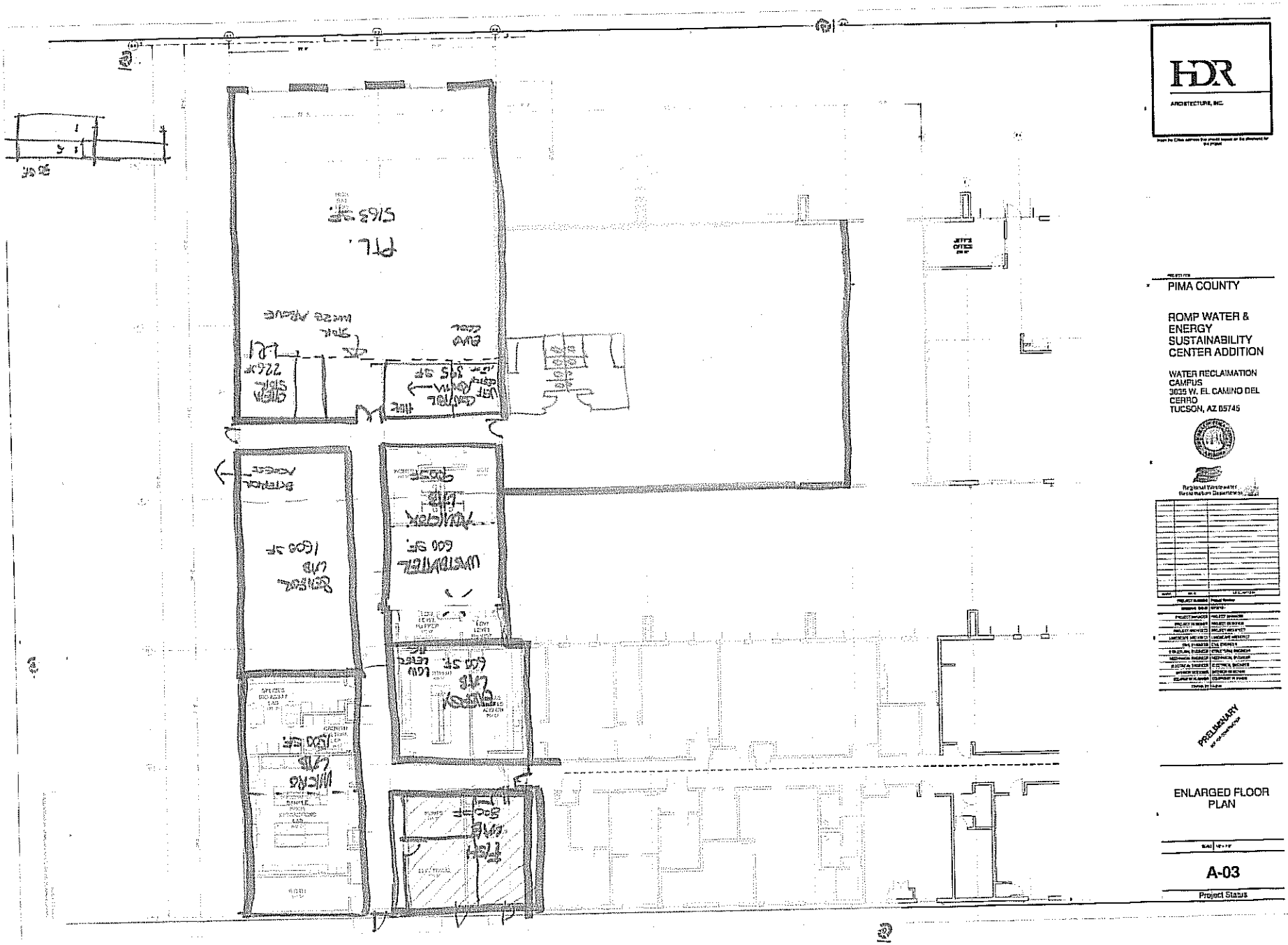
Ian Pepper	ERL	Jeff Bliznic	ERL
Bill Wells	HDR	Brian Giebink	HDR
John Hill	PCFM	Reid Spaulding	PCFM
Barb Escobar	RWRD	Jeff Prevatt	RWRD
Bill Vos	UA	Bob Smith	UA

Item	Type	Owner	Item Description	Disc	Date Due	SOW	SCH	COST
2 . 1	DEC	Reid Spaulding	LAB: Pima County can only commit to construction what is justified for in the terms of the Pima County bond funding.	O		☐	☐	☐
2 . 2	DEC	Bob Smith	LAB: The UA is looking for flexibility, but within what is justified in the terms of the Pima County bond funding.	U		☐	☐	☐
2 . 3	DEC	Jeff Prevatt	LAB: Future lab expansion to include: Organic labs, Inorganic Labs and the Fish Lab.	U		☐	☐	☐
2 . 4	DIS	Ian Pepper	LAB: The labs that we would be developing within Jeff Prevatt's future lab expansion are: Microbiology, Energy, Wastewater, Aqua Toxicology	U		☐	☐	☐
2 . 5	DIS	Jeff Prevatt	LAB: I am interested in looking at Ian Pepper's lab layouts, these configurations could be acceptable for my future labs and the costs covered by the Pima County bond funding.	U		☐	☐	☐
2 . 6	DEC	Bill Vos	LAB: Move the men and women's toilets out of the Lab area into the Office area.	U		☐	☐	☐
2 . 7	DIS	Bill Wells	LAB: After reviewing several layouts, a consensus was achieved for generic square foot layouts and locations within the Lab footprint. HDR will email Jeff Bliznic these layouts and he will complete a timely layout the UA's labs within these parameters for Barbara Escobar and Jeff Prevatt to review. Upon this timely approval HDR will complete the floorplan reflecting these layouts.	A		☐	☐	☐
2 . 8	DIS	Bill Wells	OFFICE: In order to get natural light to the interior of the office space HDR suggested locating the open office (cubicles) along the perimeter as much as possible. We toured the ROMP CLC offices where this was done.	A		☐	☐	☐
2 . 9	DIS	Ian Pepper	OFFICE: Defined the hierarchy of offices / sizes from enclosed offices, cubicles and support spaces, see attachment.	U		☐	☐	☐
2 . 10	DIS	Bill Wells	OFFICE: HDR will based upon this information lay out the offices and support spaces. HDR will email layouts to Dr. Pepper for his review prior to the August 2nd over the shoulder review. A mid course over the shoulder review is scheduled for August 2, 2012 at ROMP CLC.	A		☐	☐	☐

			Based upon this mid course over the shoulder review HDR will complete the "WEST Lab Study" by August 16, 2012.				
2 . 11	DIS	Bill Wells	Attached are the following: 1. Scan of the conceptual layout of the Lab area. 2. Office program	A	☐	☐	☐

West Lab Expansion – Administrative Office Area Program (rev 7-23-12)

Room/Area	Size	Quantity	TotalNSF
Open Office Space			
Post Doc. Cubicles	96 SF	6	576 SF (open office space)
Grad Student Cubicles	24 SF	30	720 SF (open office space)
Private Offices			
Large Office	240 SF	2	480 SF
Professor's Office	120 SF	6	720 SF
Admin. Office	120 SF	1	120 SF
Ancillary Spaces			
Large Conference Room	275 SF	1	275 SF
Small Conference Room	120 SF	1	120 SF
Copy / Supply Room	120 SF	1	120 SF
Break Room	120 SF	1	120 SF
Tele / Data Room	75 SF	1	75 SF
Electrical Room	125 SF	1	125 SF



HDR
ARCHITECTURE, INC.

PIMA COUNTY

ROMP WATER & ENERGY SUSTAINABILITY CENTER ADDITION

WATER RECLAIMATION CAMPUS
3835 W. EL CAMINO DEL CERRO
TUCSON, AZ 85745

PRELIMINARY

ENLARGED FLOOR PLAN

A-03

Project Status

ROD Number 3

Pima County
Tucson,AZ
WEST Lab
Client PO Number 10000
HDR Project: 11951-001158

Recorded By: Bill Wells
Location: RWRD CLC
Date / Time 8/2/2012 8:30 AM
Type: Meeting
Purpose over the shoulder review

Participants:

Ian Pepper	ERL	Jeff Bliznic	ERL
Bill Wells	HDR	Brian Giebink	HDR
David Chargin	HDR	John Hill	PCFM
Reid Spaulding	PCFM	Barb Escobar	RWRD
Jeff Prevatt	RWRD	Bill Vos	UA

Item	Type	Owner	Item Description	Disc	Date Due	SOW	SCH	COST
3 . 1	DEC	Ian Pepper	Virus Lab: Bio Hood in this lab. UA has three that can be relocated, i.e. owner furnished equipment.	U		☐	☐	☐
3 . 2	DEC	Jeff Prevatt	Trace Metals Lab: 1. install standard lab casework for now, when RWRD occupies they will install epoxy tops and poly pro cabinets at that time. 2. Autoclave is electric with RO supply.	U		☐	☐	☐
3 . 3	DEC	Jeff Prevatt	Hg and Virus labs: these labs on the exterior wall delete the windows in both labs.	U		☐	☐	☐
3 . 4	DEC	Ian Pepper	Energy Lab: (1) no bench fume hood, (3) 6'-0" fume hoods and (1) 5'-0" fume hood.	U		☐	☐	☐
3 . 5	DEC	Barb Escobar	Energy Lab: Add standard ROMP CLC lab window in exterior wall at courtyard, by Pima County.	U		☐	☐	☐
3 . 6	DEC	Ian Pepper	Aquatics Lab: 1. provide a move in path for future tanks/equipment, tank size is 5'-0" X 9'-0". 2. Ian concurs with item # 33. John, you are correct in moving ahead with what Pima County can provide. Anything more than that the UA will have to figure out a way to provide down the road, Ian 3. The temperature of the water would be controlled by equipment as part of the UA tenant fit-up.	U		☐	☐	☐
3 . 7	DEC	Ian Pepper	Sensor Lab: Delete window in exterior wall.	U		☐	☐	☐
3 . 8	DEC	Ian Pepper	High-Bay Lab: 1. Pipe access: 4" or 6" diameter pipes for access to potable water, final reclaimed water, two stub-outs for future water types. 2. Pipe access: 1" diameter pipes for final reclaimed water distributed to the Sensor Lab and Aquatics Lab. 3. No overhead bridge crane, materials to be moved by forklift. 4. Provide flatbed truck access, not 53' semi truck access, if this access is required, deliveries to be to ROMP CLC loading dock and delivered to the WEST Lab. 5. Provide a mezzanine over the portion of the lab corresponding to the chemical storage room. 6. Forklift storage to be at DBO site.	U		☐	☐	☐

ROD Number 3

3 . 9	DEC	Ian Pepper	Office: 1. Layout sufficient for cost estimate, census of staff met albeit crowded. 2. In future there could be fewer grad students stations and more professor offices.	U	☐	☐	☐
3 . 10	DEC	Ian Pepper	Cost allocation, Nutrient Lab: 1. Bio Chem Hood by UA 2. Chem Hood stub-out for future ROMP CLC use, vent and HVAC capacity + water and drain for sink, by Pima County.	U	☐	☐	☐
3 . 11	DEC	Jeff Prevatt	Cost allocation, Nutrient Lab: 1. Chem Hood stub-out for future ROMP CLC use, vent and HVAC capacity + water and drain for sink, by Pima County.	U	☐	☐	☐
3 . 12	DEC	Ian Pepper	Cost allocation, Prep Room: 1. Ice maker by UA.	U	☐	☐	☐
3 . 13	DEC	Jeff Prevatt	Cost allocation, Prep Room: 1. Water and floor drain for Ice maker by Pima County. 2. Dish washer, water and sewer, by Pima County. 3. Sink, water and sewer, by Pima County.	U	☐	☐	☐
3 . 14	DEC	Ian Pepper	Cost allocation, PCR Post lab: 1. Bio Hood, by UA.	U	☐	☐	☐
3 . 15	DEC	Ian Pepper	Cost allocation, Cell Culture lab: 1. Bio Hood, by UA.	U	☐	☐	☐
3 . 16	DEC	Ian Pepper	Cost allocation, Molecular lab: 1. Standard casework, by UA. 2. Freezer (-80 F), by UA.	U	☐	☐	☐
3 . 17	DEC	Jeff Prevatt	Cost allocation, Molecular lab: 1. Utility stub outs by Pima County. 2. Chem Hood stub-out for future ROMP CLC use, vent and HVAC capacity + water and drain for sink, by Pima County.	U	☐	☐	☐
3 . 18	DEC	Ian Pepper	Cost allocation, Wastewater lab: 1. Fume Hood no bench, by UA. 2. Two lab casework islands 3. Lab casework on both walls.	U	☐	☐	☐
3 . 19	DEC	Jeff Prevatt	Cost allocation, Waste water lab: 1. Two standard lab casework islands, by Pima County. 2. Standard lab casework on both walls. 3. (3) chemical fume hoods, by Pima County. 4. Add standard ROMP CLC lab window in exterior wall at courtyard, by Pima County.	U	☐	☐	☐

			5. Add ROMP CLC type lab gases alcove, shared between two labs, by Pima County in next phase. Bill Vos added" Given that we agreed that a ROMP type lab gas storage alcove will be built between labs by PC then this requires piping gasses to work benches and hoods. Wouldn't such gas piping/routing be provided under base contract by PC as infrastructure cost (as such piping would occur in wall, in ceiling, in slab) with UA covering the cost of the supplying the gas cylinders housed in the gas storage room. Under this scenario, would not PC cover the cost of the compressor and piping routing to bench and hoods (for compressed air) since such would be built into the infrastructure and easily used or repurposed by PC when PC reacquires leased space? John Hill Added "Agreed, only in the areas defined as usable by RWRD, not in the UofA's sensor lab, aquatics lab or energy lab. Pima County will provide the piping and compressed air cylinders for the labs south of sensor lab and energy labs, but the UofA will be responsible for their own compressed air cylinders and vendors that provide those cylinders."				
3 . 20	DEC	Ian Pepper	Cost allocation, Energy lab: 1. Fume Hood no bench, by UA. 2. (3) chemical fume hoods, by UA. 3. Lab gas cylinders: N2, CO2, vacuum and compressed air, by UA.	U	☐	☐	☐
3 . 21	DEC	Jeff Prevatt	Cost allocation, Energy lab: 1. Stub out capacity and utility for the Chemical Fume Hoods, by Pima County.	U	☐	☐	☐
3 . 22	DEC	Ian Pepper	Cost allocation, Aquatics lab: 1. Standard lab casework by UA. 2. Sealed Conc. floor, by Pima County. 3. Walls epoxy paint on GWB, by Pima County.	U	☐	☐	☐
3 . 23	DEC	Ian Pepper	Cost allocation, Sensor lab: 1. Unistrut system in ceiling, by UA. 2. Warehouse type lighting, by Pima County 3. Standard Lab casework, by UA, owner furnished owner installed (OFOI). 4. Walk-in cooler, OFOI. 5. Autoclave, OFOI. 6. Corrosive cabinet, OFOI.	U	☐	☐	☐
3 . 24	DEC	Jeff Prevatt	Cost allocation, Sensor lab: 1. Sealed Conc. floor, by Pima County. 2. Walls epoxy paint on GWB, by Pima County. 3. Ozone sensor to roof exhaust, by Pima County.	U	☐	☐	☐
3 . 25	DEC	Jeff Prevatt	Cost allocation, High Bay lab: 1. Central electrical panels overhead (220V and 110 V) to lab, by Pima County. 2. Water to lab overhead, by Pima County. 3. Trench drains, by Pima County. 4. Reclaimed water (6" pipe) delivered from Santa Cruz to lab, down floor drains, by Pima County. 5. Sealed Conc. floor, by Pima County. 6. Walls epoxy paint on GWB, by Pima County. 7. Control room, power and data, by Pima County. 8. Control room, glass viewing into lab, by Pima County.	U	☐	☐	☐

			9. Mezzanine, by Pima County. 10. Mezzanine OK for MPE equipment placement. 11. Lighting is warehouse type lighting.					
3 . 26	AR	Shane Snyder	Cost allocation, High Bay lab: 1. Confirm type of chemicals stored in Chemical Storage. 2. Confirm quantity of chemicals stored in Chemical Storage.	U	8/6/2012	☐	☐	☐
3 . 27	DEC	Jeff Prevatt	Cost allocation: Special systems by Pima County: 1. The security provided by Pima County is limited to intrusion detection and access between the County and UA sides of the building. John Hill added" Pima County will not provide interior security camera's...that kind of monitoring will be by UofA and would be an entirely separate system not tied into the building intrusion system or into the County's security camera system. For data/comm., Pima County will provide cable tray and raceway's and an empty rack in the data/comm. room. The UofA will provide routers, switches, CAT6A cabling and phone systems. Security for the building envelope will be by Pima County and included in the GC's scope as an extension of the existing security system." 2. Phone and Data whole system provided, phone devices NIC.	U		☐	☐	☐
3 . 28	DEC	Jeff Prevatt	Cost allocation: General: 1. New electrical transformer, meter, distribution, by Pima County. 2. Use existing Emergency generator for fish labs. 3. Airquity system, by Pima County. 4. Exhaust energy recovery system, by Pima County.	U		☐	☐	☐
3 . 29	DEC	Bill Vos	Cost allocation: General: 1. Consensus was that no emergency generator is needed now given redundant power supply already available and given that Pima County is to acquire additional back-up generators around the time of project completion or soon thereafter and once acquired the generator(s) could be repurposed for this development. Reid Spaulding added," Correct, but Pima County makes no firm commitment at this time due to lack of certainty as to schedule or compatibility of generator(s). It's hopefully a future option, that is all" John Hill added, "and is at the discretion of RWRD, if a suitable generator is available. Pima County will include the infrastructure to hook up a generator." 2. Building operating schedule (for MPE systems) 7 am - 5 pm, M-F. 3. No semi truck access required, flat bed truck.	U		☐	☐	☐
3 . 30	DEC	Reid Spaulding	Cost allocation: General: 1. Operating cost electrical, Tucson Electric Power, GS-10 rate times 1.075. 2. Natural gas use same as ROMP CLC. 3. Water same as ROMP CLC. 4. Sewer same as ROMP CLC. 5. Maintenance costs calculated (..... 6. Building pad soil backfill compacted base, soil by Pima County; placement and compaction by contractor.	O		☐	☐	☐
3 . 31	DEC	John Hill	Cost allocation: General: 1. Under slab utilities by Pima County. 2. All walls by Pima County.	O		☐	☐	☐

ROD Number 3

3 . 32	AR	Reid Spaulding	Cost allocation: General: 1. Maintenance costs calculation to be confirmed by Reid.	O	8/6/2012	☐	☐	☐
3 . 33	DEC	John Hill	Clarification to the Aquatics Lab: 1. For the sake of moving forward on schedule, I am directing HDR to estimate the aquatics lab according to what Pima County is able to provide (68^0F lower limit and maintained at a specific temp +/- 3^0F).	O		☐	☐	☐

Pima County Facilities Management Annual Facilities R&M Estimate UA ROMP Wastewater Lab		
Account	**Description**	**Annual Amount**
5400	Salaries & Wages (1/4 FTE)	10,400
5431	Benefits (30% of salaries)	3,120
5430	Interdepartmental Salaries	0
5010	R & M Supplies A/C Filters-$600 Cel Dek Pads-$1800 Pumps/belts/bearings/floats-$500 Lighting-fluorescents/ballasts/wall paks/accent lighting-$100	8,800
5300	Phones/Pagers + Alarm Lines (40 X 2 lines x 12)	960
5301	Electricity	By Utility
5303	Natural Gas	By Utility
5302	Water & Sewer	By Utility
5304	* Refuse/Recycling ($250 mo. for both)	3,000
5150	R&M Buildings & Grounds Automatic Doors Maintenance-$600 Overhead Door Maintenance-$1500 Fire Alarm Inspection/Testing-$1500 Air Flow/Negative Air/Air Balance-$2000 Flow hood certification (annual)-$500 Pest Control $600 **Emergency Generator Test, Service & Permit **NOT INCLUDED**	6,700
	O&M Expenses	$32,980
	FMD Overhead (26.5% of Expenses)	$8,740
	Insurance (.0610 per $100 of combined building and content/equipment value of $5,000,000.	$3,050
	*** Janitorial services (use pro rata share of what ROMP CLC is paying, $1,800/month)	$ 21,600
	Capital Reserves	To be determined
	TOTAL =	**$66,370**
	PER SQUARE FT =	**$2.96**

DISCLAIMER

* Refuse service excludes bio hazardous waste disposal, pick up or filtration.

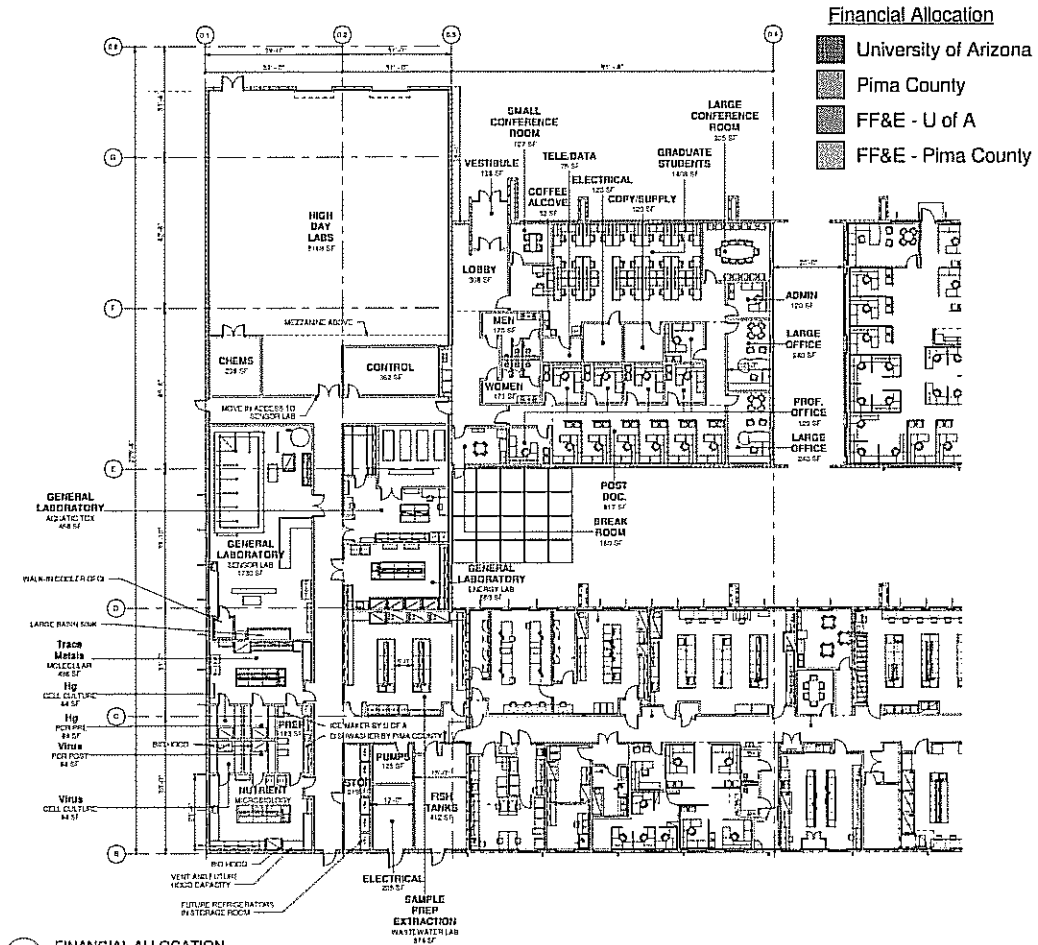
** No emergency generator exists.

*** No janitorial service provided for either the offices or laboratory, by Pima County.

Closed ARs

HDR Project: 184900 **Pima County** Tucson,AZ WEST Lab

Item	Owner	Item Description	Due	Closed	Closure Description	SOW	SCH	COST
Building 1 WEST Lab								
Owner								
3 . 32	Reid Spaulding	Cost allocation: General: 1. Maintenance costs calculation to be confirmed by Reid.	8/6/2012	8/8/2012	See attachment, present sub total as of Aug 8, 2012 is $44,770 per year.	☐	☐	☐
User								
3 . 26	Shane Snyder	Cost allocation, High Bay lab: 1. Confirm type of chemicals stored in Chemical Storage. 2. Confirm quantity of chemicals stored in Chemical Storage.	8/6/2012	8/8/2012	The types and quantity of chemicals to be stored are: coagulants, ferric chloride and aluminum sulfate (alum). 25 pounds of each coagulant. Oxygen, we would use tanks of oxygen, generally 6 tanks chained together or a liquid oxygen tank (LOX). LOX is preferred, but we can use gas if that is easier. I would probably store 25 gallons of sodium hypochlorite solution, 10% purity chlorine by weight.	☐	☐	☐



1 FINANCIAL ALLOCATION

N

HDR ARCHITECTURE, INC.

Schneider Associates Structural Engineers

Compusult
Compusult, Inc.
Construction Cost Consulting

Project Status

ROMP WATER & ENERGY SUSTAINABILITY CENTER ADDITION

PIMA COUNTY
WATER RECLAIMATION CAMPUS
3035 W. EL CAMINO DEL CERRO
TUCSON, AZ 85745

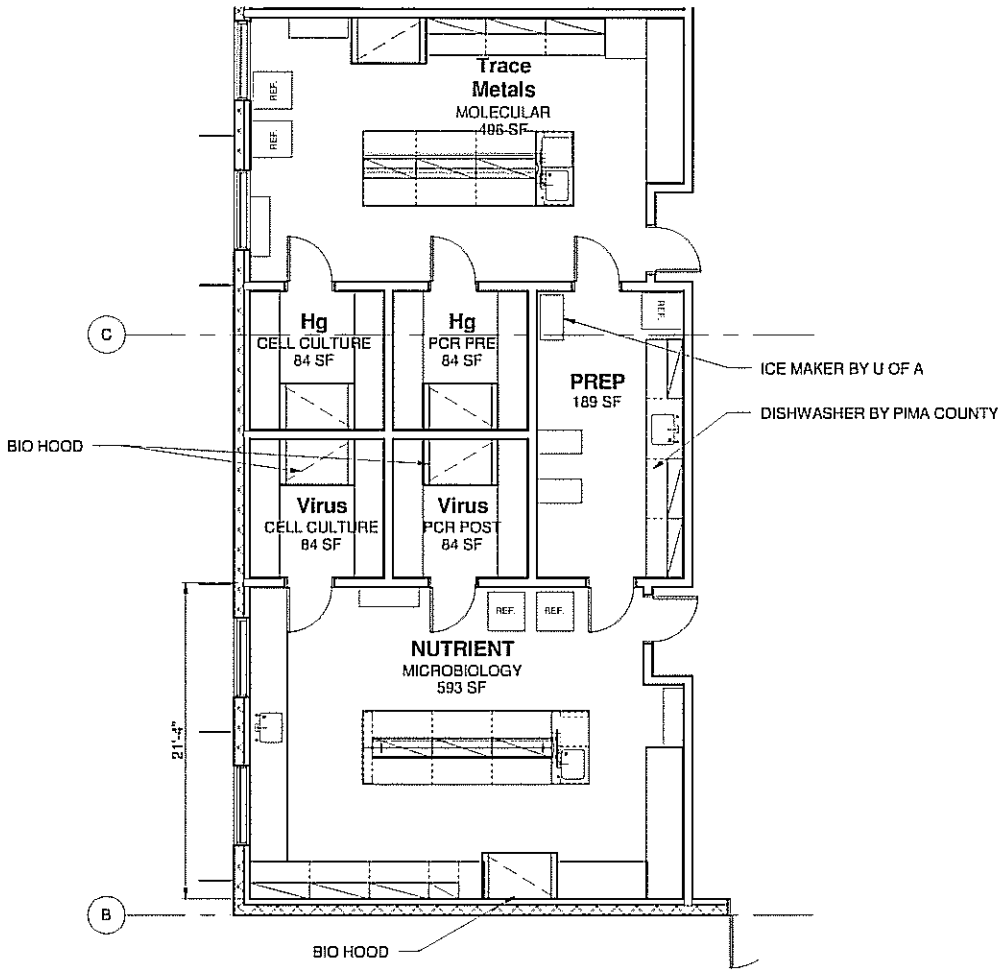
FLOOR PLAN - FINANCIAL ALLOCATION

SHEET NUMBER
A-04

08/02/2012

The Peaks of Pima County Arizona

Regional Wastewater Reclamation Department



1 ENLARGED PLAN - CELL CULTURE AND MOLECULAR LABS

1/8" = 1'-0"

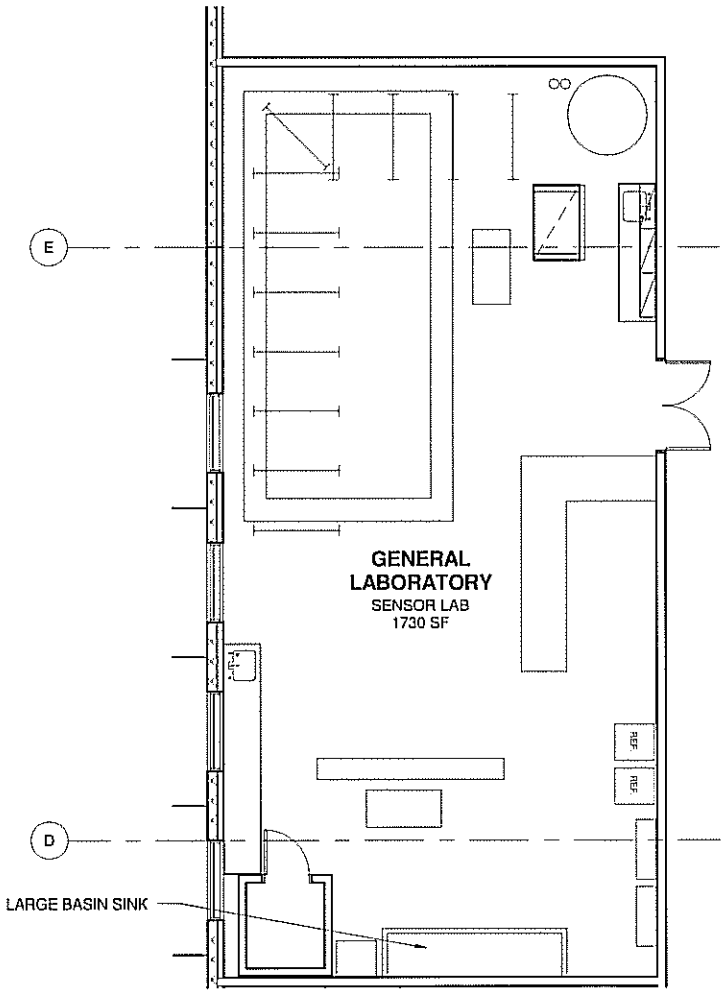
ROMP WATER & ENERGY SUSTAINABILITY CENTER ADDITION

CELL CULTURE AND MOLECULAR LABS

08/02/2012

A-05

HDR



1 ENLARGED PLAN - SENSOR LAB

1/8" = 1'-0"

ROMP WATER & ENERGY SUSTAINABILITY CENTER ADDITION

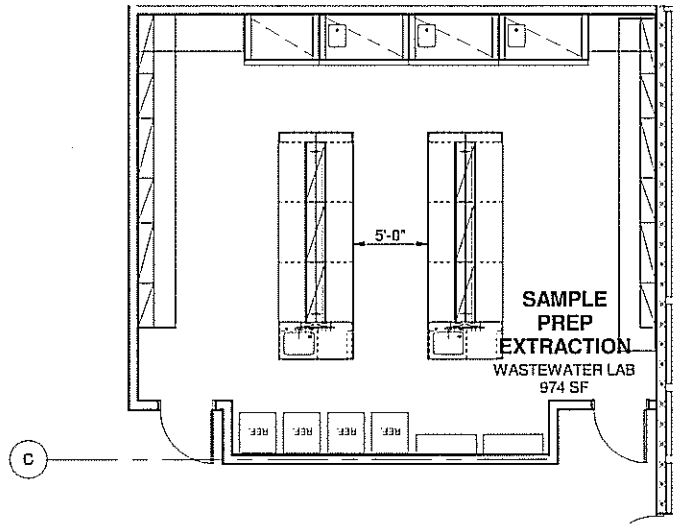
SENSOR LAB

08/02/2012

N

HDR

A-06



1 ENLARGED PLAN - WASTEWATER LAB

1/8" = 1'-0"

A-07

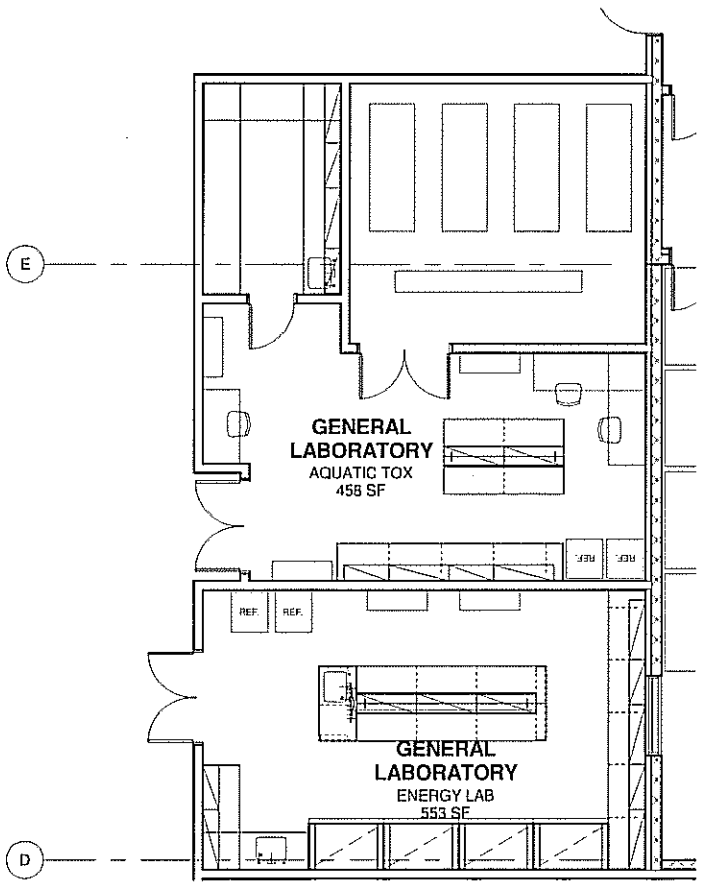
ROMP WATER & ENERGY SUSTAINABILITY CENTER ADDITION

WASTEWATER LAB

08/02/2012

N

HDR



1 ENLARGED PLAN - ENERGY AND AQUATIC TOXICOLOGY LABS

1/8" = 1'-0"

A-08

ROMP WATER & ENERGY SUSTAINABILITY CENTER ADDITION

ENERGY AND AQUATIC TOXICOLOGY LABS

08/02/2012

N

HDR

EXHIBIT D
RULES AND REGULATIONS

Re: 3035 W. El Camino del Cerro, Tucson. Arizona
Tenant: University of Arizona

These Rules & Regulations have been adopted by Landlord in order to set forth standards of conduct that will allow all tenants to enjoy a professional working environment that is compatible with the general character of the Building. Landlord reserves the right to make amendments and/or additions to these Rules and Regulations from time to time. These Rules and Regulations are in addition to and shall not be construed to modify or amend any of the terms, covenants, or agreements and conditions of a tenant's lease. Each tenant shall be responsible for informing its employees and invitees as to the provisions of these Rules and Regulations and to enforce same with respect to its employees and invitees. Landlord may waive compliance with any one or more of these Rules and Regulations for the benefit of a tenant. Such waiver shall not be construed as a waiver for any other tenant, nor shall it prevent Landlord from enforcing the same against any or all other tenants. These rules may only be enforced by Landlord. The failure of Landlord to enforce any Rule or Regulation shall not give any tenant the right to enforce same against another Building occupant. Any concerns about violations of the Rules and Regulations should be addressed to the Pima County Facilities Management Department, 150 W. Congress, 3rd Floor, Tucson, Arizona.

1. No sign, placard, picture, advertisement, name or notice shall be inscribed, displayed, printed or affixed on or to any part of the inside of the Building without the prior written consent of Landlord. Landlord shall have the right to remove any unapproved sign, placard, picture, advertisement, name or notice located on the Building or the Premises without notice to and at the expense of Tenant. All approved signs must be placed or affixed on the wall adjacent to Tenant's entry doors. All approved signs shall be printed, painted, inscribed, affixed or removed at the expense of Tenant by a person approved by Landlord. All walls or other structures where Tenant's signs have been affixed or attached must be restored to their original condition at Tenant's expense after removal of such signs.

2. Tenant shall not place anything or allow anything to be placed near any window, door, partition or wall that may appear unsightly from outside the Building, nor may Tenant cause any window in the Building to be color treated.

3. The sidewalks, halls, passages, exits, and entrances shall not be obstructed by Tenant or used for any purpose other than for ingress and egress from the Building or Premises.

4. Tenant shall not alter any lock or install any new or additional locks or any bolts on any doors or windows of the Building or Premises without prior written consent of Landlord, which will not be unreasonably withheld. Landlord shall have no obligation to open Tenant's Premises due to the loss of keys by Tenant. All requests to open Tenant's Premises to guests or employees must be made by Tenant to Landlord. If Tenant needs to have its leased Premises

rekeyed for any reason, Tenant shall use the Landlord's authorized building locksmith. Any rekeying shall keep the applicable lock on the existing building master keyway. Tenant shall bear the entire cost of rekeying, unless the rekeying is requested by Landlord. Any installation or repair of specialty locks shall be at Tenant's expense. Tenant assumes all responsibility for protecting the Premises from theft, robbery, and pilferage, including but not limited to, keeping all means of entry to the Premises closed and locked.

5. The plumbing facilities shall not be used for any purpose other than that for which they were constructed and no foreign substance of any kind whatsoever shall be thrown therein. The expense of any breakage, stoppage or damage resulting from a violation of this provision shall be borne by the Tenant whose employee, agent or invitee shall have caused it.

6. Tenant shall not deface the Building or any part thereof. Tenant will not install, affix or fasten to the rooftop any signs, satellites, or antennas without the prior written approval of Landlord. Landlord may require design drawings, specifications and/or weight load structural tests prior to granting approval for any rooftop installation. Tenant shall bear the entire expense of any drawings or tests to be submitted to Landlord for approval.

7. Any damage to the doors, frames, walls or hallway surfaces caused by Tenant or Tenant's invitees or moving contractors shall be repaired at Tenant's expense. Landlord shall have the right to prescribe the weight, size and position of all heavy equipment brought into the Premises. Heavy objects, shall, stand on supports of such thickness as is necessary to properly distribute the weight.

8. Tenant shall not use, keep or permit to be used or kept any foul or noxious gas or substance in the Premises, or permit or allow the Premises to be occupied or used in a manner offensive or objectionable to the Landlord by reason of noise, odors and/or vibrations. No animals shall be brought in or kept in or about the Premises or the Building except service animals.

9. Tenant will use appropriate care and maintenance of all gas propane tanks and gas grill any other flammable or combustible fluid or material, or use any method of heating or air conditioning other than that supplied by Landlord.

10. Tenant acknowledges that it is responsible for periodic inspections of the Premises by the local jurisdictions' Fire Department for Fire Code compliance matters. Tenant, and its employees, contractors and invitees shall comply with any fire safety and handicap procedures and regulations established by the Landlord and/or any governmental agency. Tenant shall distribute to its employees, representatives, contractors and invitees a copy of these Rules and Regulations and all fire drill safety and handicap material provided to it from time-to-time by Landlord and/or any governmental agency. If an audible fire alarm is sounded in the Building, Tenant must take immediate and prudent actions to evacuate its employees, guests or contractors from the Building through designated exits as posted by Landlord. Tenant shall notify Landlord in writing of the emergency contact information of two on-site employees or representatives who are responsible for emergency evacuations or fire drills for their Premises.

Tenant is responsible for notifying the Landlord in writing of any changes to such assignments. Each Tenant will notify the Landlord of any handicapped occupants or other individuals who may require special assistance in the event of an emergency.

11. No smoking is allowed in any part of the Building or anywhere on the Premises. Tenant will instruct it employees, students, contractors and invitees of this regulation.

12. Tenant will direct their electricians and/or phone installation employees or contractors as to where and how telephone and computer network cables are to be introduced. No boring or cutting for wires will be allowed without the consent of the Landlord. The location of telephones, call boxes and other office equipment affixed to the Premises shall be subject to the approval of Landlord.

13. Outside of Business Hours, Tenant and its employees may access the Premises by using the keys provided by Landlord or other keys Tenant has made with Landlord's approval. The Landlord will in no case be liable for damages with regard to the admission to or exclusion from the Building of any person. In case of invasion, mob, fire alarm, bomb threat, riot, public excitement, or other commotion, Landlord reserves the right to prevent access to the Building during the continuance of the same by closing of the doors or otherwise, for the safety of the Tenants' occupants and the protection of the Building.

14. Landlord reserves the right to exclude or expel from the Building or Premises any person who, in the judgment of Landlord, is intoxicated or under the influence of alcohol or drugs, or who shall in any manner do any act in violation of any of the rules and regulations of the Building or impair the safety of any Tenant, employee, or contractor of Landlord located in the Building.

15. All entrance doors in the Premises must be locked by Tenant when the Premises is not in use, and all doors opening to public corridors must be kept closed except for normal ingress and egress from the Premises. All emergency fire exit doors must remain free of debris from both the interior and exterior and remain locked when not in use.

16. The exterior areas immediately adjoining the Premises must be kept clean and free from rubbish by Tenant and Tenant will not place or permit any obstruction in such areas.

17. Upon the termination of the tenancy, Tenant will deliver to Landlord all keys to the Premises and Building that have been furnished to Tenant.

18. Only a microwave oven, coffee maker and refrigerator are allowed to be used by Tenant's employees in the break room of the Premises.

Exhibit E

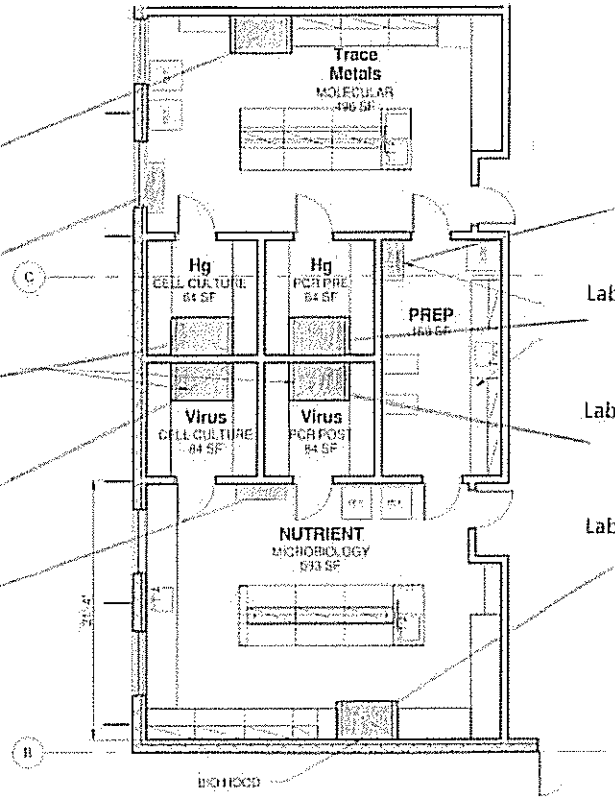
Hemco Chemical Fume Hood
60"x30"x60" 120V/Roof Vented
Field's Lab/ERL

VWR -80 Freezer
80"x30"x30" 120V
Mic. Bldg. 4th Flr. Corridor

NuAire Laminar Flow Hood
74"x32"x48" 120V
Mic. Bldg. Room 410

Labconco Class 2 Bio-Safety Hood
42"x60"x32" 120V
Prion Lab/ERL

Revco -80 Freezer
30"x84"x42" 120V
Mic. Bldg. Room 412A



Scotsman Shaved Ice Maker
120V/Water Supply/Drain
Mic. Bldg. 4th Flr. Corridor

Labconco Class 2 Bio-Safety Hood
42"x60"x32" 120V
Mic. Bldg. Room 407C

Labconco Class 2 Bio-Safety Hood
60"x32"x54" 120V
Mic. Bldg. Room 406A

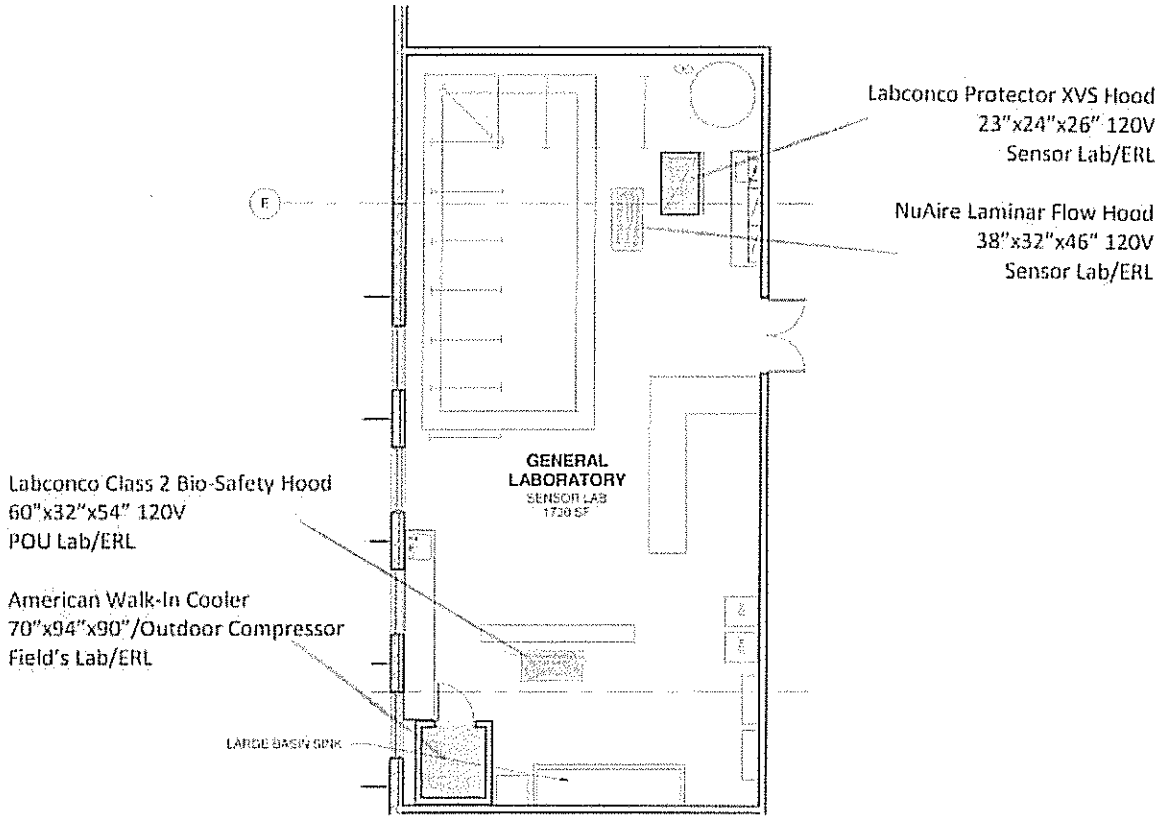
Labconco class 2 Bio-safety Hood
42"x60"x32" 120V
Mic. Bldg. Room 414A

1 ENLARGED PLAN - CELL CULTURE AND MOLECULAR LABS

ROMP WATER & ENERGY SUSTAINABILITY CENTER ADDITION
CELL CULTURE AND MOLECULAR LABS
08/02/2012

A-05

HDR



1 ENLARGED PLAN - SENSOR LAB

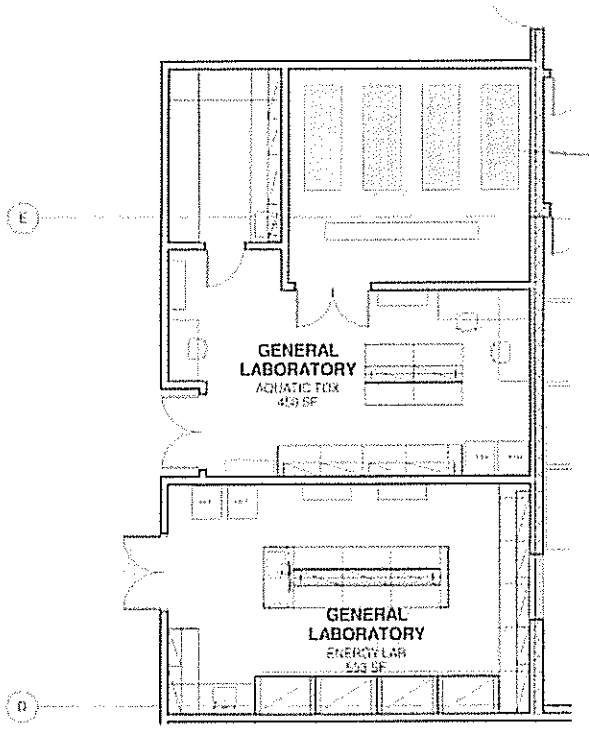
ROMP WATER & ENERGY SUSTAINABILITY CENTER ADDITION

SENSOR LAB

06/02/2012

A-06

HDR



(4) Aquatic Raceways
5'x12'x2.5'
Aquatic Toxicology lab/ ERL

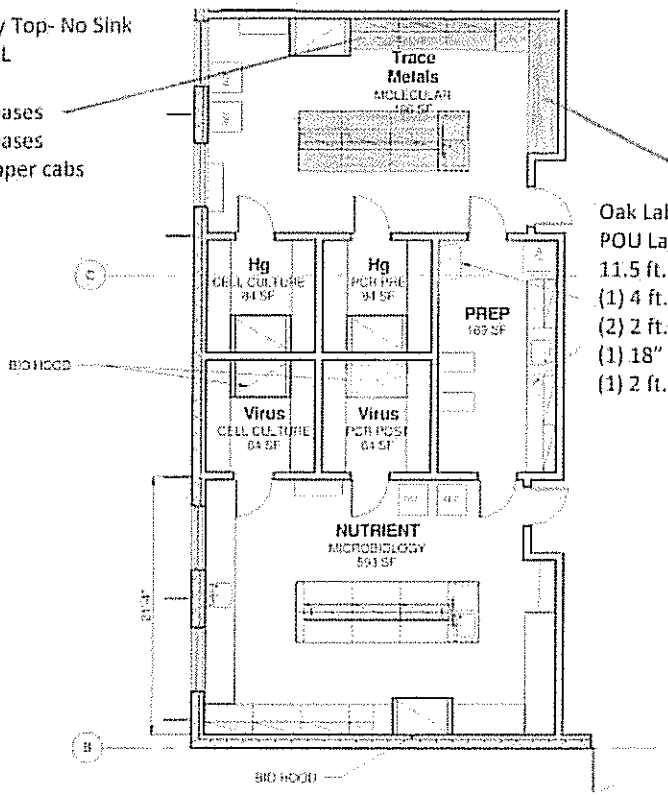
1 ENLARGED PLAN - ENERGY AND AQUATIC TOXICOLOGY LABS

A-08

ROMP WATER & ENERGY SUSTAINABILITY CENTER ADDITION
ENERGY AND AQUATIC TOXICOLOGY LABS
06/02/2012

HDR

Oak Lab Bench Epoxy Top- No Sink
Education Center/ERL
16 ft. Total:
(3) 4 ft. top drawer bases
(2) 2 ft. top drawer bases
(2) 4 ft. glass door upper cabs



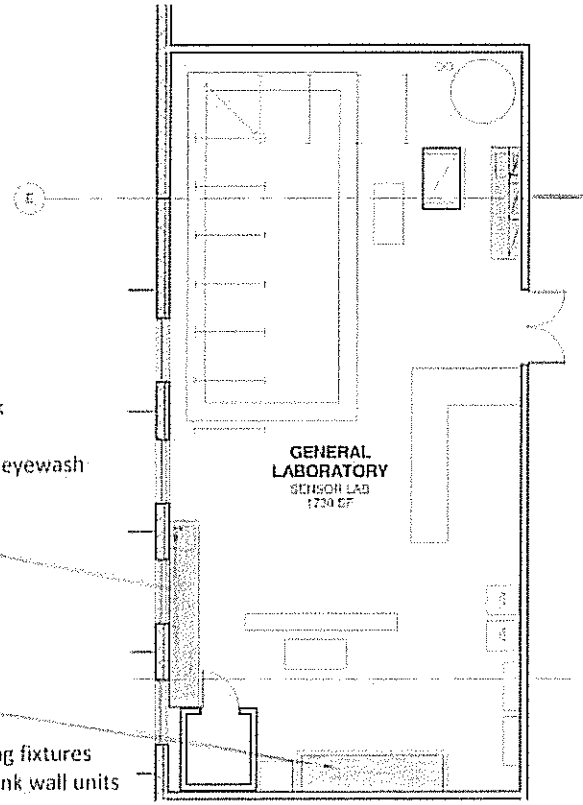
Oak Lab Bench Epoxy Top- No Sink
POU Lab/ ERL
11.5 ft. Total:
(1) 4 ft. top drawer base
(2) 2 ft. full drawer bases
(1) 18" cupboard base
(1) 2 ft. cupboard base

1 ENLARGED PLAN - CELL CULTURE AND MOLECULAR LABS

ROMP WATER & ENERGY SUSTAINABILITY CENTER ADDITION
CELL CULTURE AND MOLECULAR LABS
03/02/2012

A-05

HDR



Oak Lab Bench Epoxy Top- Lt. End Sink
Sensor Lab/ERL
8 ft. Total: Includes water valves and eyewash
(1) 4 ft. sink base
(2) 2 ft. full drawer bases

Oak Lab Bench Epoxy Top- Rt. End Sink
Sensor Lab/ERL
16 ft. Total: Includes water valves and eyewash
(1) 4 ft sink base
(2) 4 ft. top drawer bases
(2) 2 ft. full drawer bases
(4) 4 ft. glass door upper cabs

Stainless Steel Sink Array
POU Lab/ERL
12 ft. Total: Includes plumbing fixtures
(2) 72" x 32" x 40" stainless sink wall units

1 ENLARGED PLAN - SENSOR LAB

ROMP WATER & ENERGY SUSTAINABILITY CENTER ADDITION
SENSOR LAB
08/02/2012

A-06

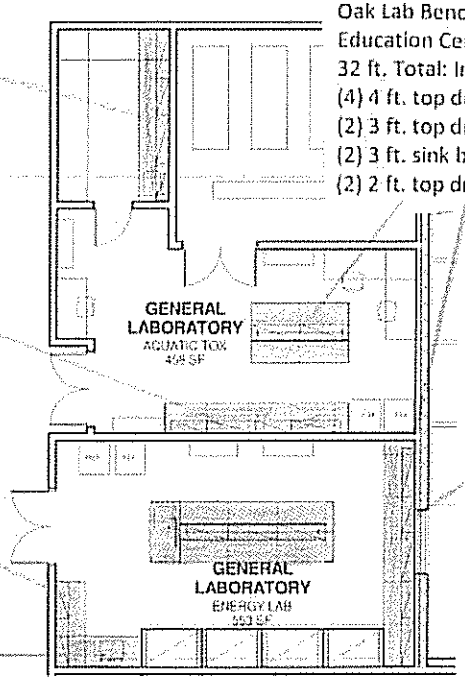
HDR

Oak Lab Bench Epoxy Top- Rt. End Sink
Water Distribution Network Lab/ ERL
16 ft. Overall: Includes water valves and eyewash
(1) 4 ft. sink base
(2) 4 ft. top drawer bases
(2) 2 ft. full drawer bases
(2) 4 ft. glass door upper cabs

Oak Lab Bench Epoxy Top- Center Sink
Wastewater Re-use Lab/ERL
16 ft. Total: Includes water valves and eyewash
(1) 4 ft. sink base
(2) 4 ft. top drawer bases
(2) 2 ft. full drawer bases
(2) 4ft. glass door upper cabs

Oak Lab Bench Epoxy Top-No Sink
POU Lab/ ERL
7.5 ft. Total:
(1) 3 ft. cupboard base
(1) 3 ft. top drawer base
(1) 18" full drawer base

Oak Lab Bench Epoxy Top- Lt. End Sink
POU Lab/ ERL
6 ft. Total: Includes water valves
(1) 3 ft. sink base
(1) 3 ft. top drawer base



Oak Lab Bench Islands -2 Sinks (may have to remake epoxy tops)
Education Center/ERL
32 ft. Total: Includes water valves and eyewash
(4) 4 ft. top drawer bases
(2) 3 ft. top drawer bases
(2) 3 ft. sink bases
(2) 2 ft. top drawer bases

Oak Lab Bench Epoxy Top-Center Sink
POU Lab/ ERL
11.5 ft. Total: Includes water valves
(1) 18" full drawer base
(2) 2 ft. full drawer bases
(1) 4 ft. sink base
(1) 2 ft. cupboard base

1 ENLARGED PLAN - ENERGY AND AQUATIC TOXICOLOGY LABS

A-08

ROMP WATER & ENERGY SUSTAINABILITY CENTER ADDITION
ENERGY AND AQUATIC TOXICOLOGY LABS
05/02/2012

HDR