

EXHIBIT A



IDAHO STATE POLICE

FORENSIC SERVICES

SCHEMATIC BASIS OF DESIGN DOCUMENT - VOLUME I

DPW Project # 22513
L/C Project # 23019.01 | SG Project #14934.001

FINAL | November 20, 2024

SMITHGROUP

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PROJECT TEAM

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DIVISION OF PUBLIC WORKS**

AGENCY

IDAHO STATE POLICE

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ERICKSON CIVIL

LANDSCAPE ARCHITECTURE

STACK ROCK GROUP

STRUCTURAL ENGINEERING

LOCHSA ENGINEERING

MEP ENGINEERING

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LABORATORY PLANNING

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AV/TECHNOLOGY/SECURITY

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INDEPENDENT COST ESTIMATOR

PROJECT COST RESOURCES

CONSTRUCTION MANAGER AT RISK

TBD

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Since approximately 1990, the State of Idaho population has been growing at a rapid and generally sustained pace. Until only recently, this growth was at a pace placing Idaho in the top five fastest growing states. This expansion is primarily due to migration to the State (88%) as opposed to an increased birth rate (11%)¹. Idaho's strong economy and outdoor lifestyle are primary factors bringing people to the State, but with this population growth comes additional challenges. Specifically, there is an increased focus on public safety and services for the citizens.



Programming Workshop at the Idaho State Police Headquarters

¹Corbin, Clark. "Idaho was second-fastest growing state in the U.S. in 2022." Idaho Capital Sun, 4 January 2023, <https://idahocapitalsun.com/2023/01/04/idaho-was-second-fastest-growing-state-in-the-u-s-in-2022/>

The State determined that a replacement Forensic Services facility on their Meridian, Idaho campus would be required to provide for the substantial needs of the current population and to plan for future needs. In early 2024, a complete analysis of population growth as it relates to current and future laboratory sections was conducted as part of a Needs Assessment Study.

Population change will impact the caseload quantity submitted to the laboratory. In this study, caseload changes and population were compared to gain greater clarity on the ultimate staffing to support the Meridian lab's needs to the year 2050. This increased staffing will require adequate areas to allow for the efficient processing of evidence and staff safety. Following this analysis and multiple user workshops, a facility size of 94,585 Gross Square Feet (GSF) was identified to accommodate the needs for individual spaces to complete the anticipated caseload.

Construction costs for the project are a fraction of the overall project costs. Using a project cost / construction cost ratio of 70% - 75%, and a preliminary square footage cost analysis identified that the \$29M construction budget would likely yield a building between 15,000 and 20,000 GSF. Therefore, a decision was made by the Idaho State Police (ISP) to forgo a building for all laboratory sections, favoring new operational space for the DNA and Latent Prints laboratory sections due to their required workflow adjacency, phasing the remaining program areas.

The ISP team acknowledged that with project phasing, potential capital funding could be added in the future. The team identified that future funding could include \$50M in project funding and if construction commenced on Phase 2 by the summer of 2026, a wing of approximately 26,000 sf could be added. A third phase would push the total to approximately 76,000 sf, which is below the program identified, but was assumed as the maximum funding which could be provided by the State.

Further refinement of the program needs during the Schematic Design phases yielded a program of about 16,000 SF in phase 1 (one-story), 44,000 SF in phase 2 (mix of one and two stories), and 16,000 SF in phase 3.

Site planning accommodates future project(s) to allow the initial phase to expand to meet initial funding allocations. Two additional building phases are planned due to an expectation of additional capital allocations in the future. This strategy builds from a secure site core in two directions, one for building, and one for parking necessary to accommodate the future staff quantity.

Phase	Phase Building SF	Est. Construction Cost	Est. Construction Start
Phase 1	16,000 SF	\$23.9M	January 2026
Phase 2	44,000 SF	\$41.8M	Spring 2027
Phase 3	16,000 SF	To Be Determined	To Be Determined

Ultimately, the goal of this approach is to address the Forensic Services growth needs today and into the future. Although this strategy will increase the overall project cost due to expected escalation for multiple phases, thoughtful planning as documented in this design report provides a solid foundation for efficient and effective phased facilities to support the critical public safety needs of the growing state of Idaho.

SECTION 02

PROJECT DESCRIPTION



Autopsy Suite - Johnson County Medical Examiner's Facility



Forensic Laboratory Design with access to Natural Daylight

PROJECT DESCRIPTION

Currently occupying space within the Idaho State Police, Meridian campus at 700 S Stratford Drive, Meridian, ID 83642, Meridian, Idaho, the Forensic Services team experiences challenges in completing their mission due to the limitations of their current space. The spaces do not meet the requirements to perform their work efficiently, and the lab has seen an upward trend in their case load. This trend is projected to continue as the State of Idaho population continues to grow. An expansion of operations is needed to meet caseload demand requiring additional lab, office, and support space to be built. Opportunities for expansion of laboratory space are not available within the current building.

Therefore, a site has been identified for a stand-alone Forensic Services Combined Laboratory Facility built to meet the specific requirements for the State, and to support the two other labs in the system. The site is on a vacant lot directly to the north of the existing building where the Forensic Services section is located, at the southeast corner of South Stratford Drive and East Watertower Street. This adjacency is useful due to the expectation that sections will remain in their current location once the initial phase of construction is complete. A detailed analysis of the site and its unique characteristics is included within this document.

Forensic Services currently has the following laboratory sections at the Meridian facility: Biology/DNA Casework, Blood Alcohol Volatiles, Breath Alcohol Instrument Calibration, Controlled Substances, Crime Scene Unit, DNA Casework, and Latent Print Analysis, supported by the Evidence Unit. Growth in capacity for sections including Blood and Urine Toxicology, Firearms, Trace Evidence and Digital Forensics are anticipated within the Meridian Laboratory program. Headquarters for the laboratory, including the administrative staff, Forensic Nursing, and the Idaho State Cold Case Initiative, will be co-located with the laboratory to improve casework processing efficiency and coverage.

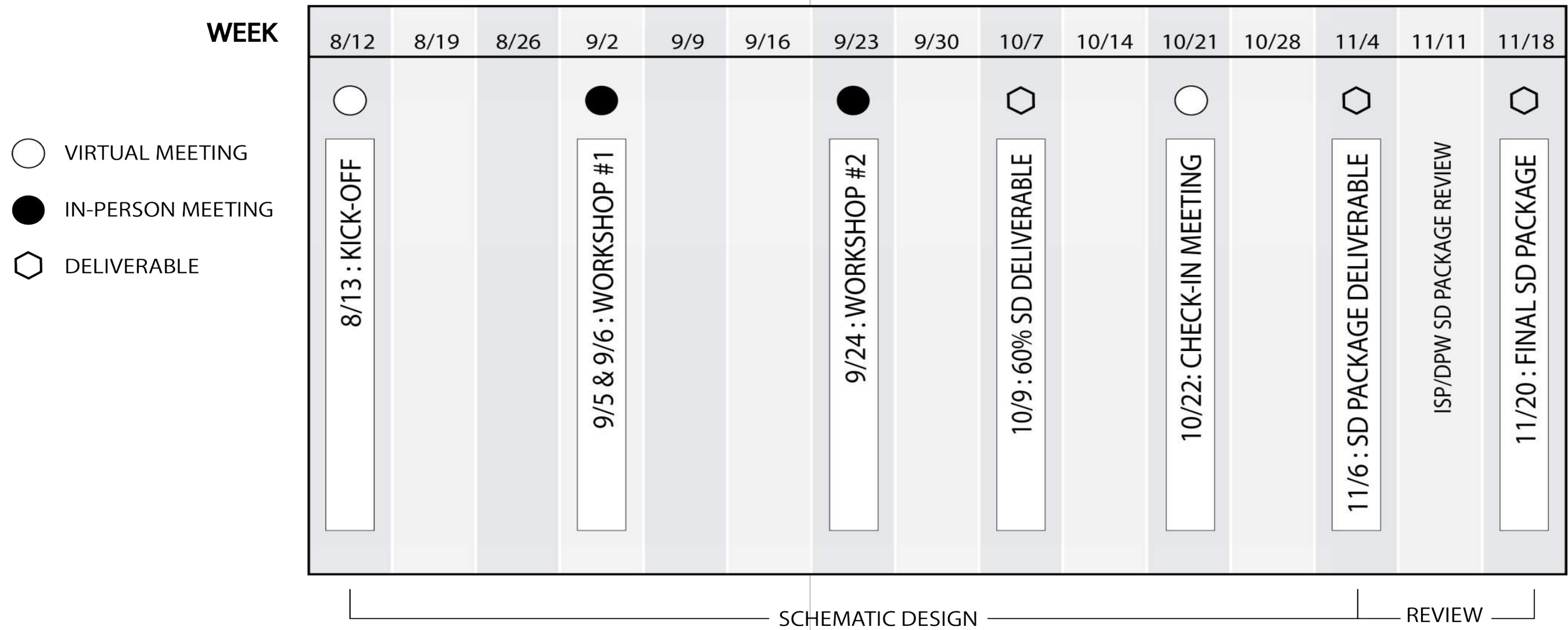
The new facility and the capacity it affords is an opportunity for greater team collaboration. Lab environments will be built to exceed current requirements for air change rates, and be equipped with reliable power and plumbing infrastructure to support the current and future forensic technology. The labs will be designed with flexibility in mind, with fixed casework and fume hoods on the perimeter and movable tables and overhead services in the middle of the rooms to allow for reconfiguration as the science evolves and expansion to newly constructed areas as funds are available.

The new facility will allow Forensic Services to better serve Idaho State Police and communities throughout the state. Planning for the facility allows for growth in the building that corresponds to growth in the projected caseload. Building infrastructure will be in place to support the latest in testing instrumentation and equipment to better align with those of peer institutions. Spaces will be organized within the building around efficient and safe workflows that will finally match the quality of work performed by the laboratory.

SECTION 03

PROJECT SCHEDULE

PROJECT SCHEDULE



PROJECT GOALS & VISION



Attractive Grounds



Recruit and Retain



Training and Collaboration



Healthy Work Environment



Ideal Functionality

PROJECT GOALS & VISION

The project goals listed below were defined as part of the program validation effort, where stakeholders and users were asked to envision and provide input on their ideal building, program, adjacencies, workflow, and overall exterior and interior of the building.

- Prestigious center for forensic science, known nationally as the best place to work
- Program driven interior layout of spaces to optimize workflow between lab, office, and support spaces.
- Flexible lab spaces with modular and reconfigurable spaces to support the team and industry's evolving needs.
- A building envelope that is durable, high performance, and economical.
- Well-being for occupants by providing exposure to outdoor spaces and natural daylighting within the building where appropriate to the program.
- Secure and safe for all staff and visitors.
- Visible, prominent, civic and inviting entry from exterior to interior.
- Strategic phasing to align with programmatic needs and funding sources.
- Interior inspired by Idaho's mountainous landscape and honoring scientists / users.
- Systems that are reliable, cost effective, energy efficient, environmentally friendly, and easily maintainable / accessible.



Team Workshop at ISP

PROGRAM SUMMARY

PROGRAM OVERVIEW SUMMARY

Idaho State Police Combined Labs						
Facility Summary	Staff	Grossing	Total NASF	SD NASF	SD GSF	Total GSF
Idaho State Police HQ	35	60%	5,414	738	1,227	9,023
Meridian Laboratory	100	60%	49,088	37,995	63,325	81,813
Building Support	0	60%	3,181	2,386	3,977	5,302
Facility TOTAL	135	60%	57,683	41,117	68,528	96,138

Idaho State Police HQ	Staff	Total NSF	Total NASF	Original NASF	Total GSF
Administration - HQ	8	1,320	1,620	209	
Forensic Nursing	4	600	726	343	
Idaho State Cold Case Initiative	23	2,360	3,068	184	
Sub-total NSF and NASF	35	4,280	5,414	738	
Grossing at		60%			9,023

Meridian Laboratory	Staff	Total NSF	Total NASF	Original NASF	Total GSF
Administration - Meridian Lab	2	5,810	6,041	3,024	
Blood Alcohol Volatiles	2	926	986	1,462	
Blood Toxicology	3	1,731	1,833	1,365	
Breath Alcohol Instrument Calibration	3	582	684	838	
Controlled Substances	9	3,662	3,944	4,446	
Digital Forensics	20	3,484	4,337	3,734	
DNA Biology	24	8,967	9,711	8,826	
DNA Database (CODIS)	8	2,655	2,907	2,410	
Firearms	4	3,367	3,499	544	
Latent Prints	14	5,190	5,628	4,652	
Trace Evidence	2	1,631	1,703	114	
Evidence Unit	6	4,904	4,572	4,220	
Crime Scene Unit	5	3,081	3,243	2,360	
Sub-total NSF and NASF	100	40,180	49,088	37,995	
Grossing at		60%			81,813

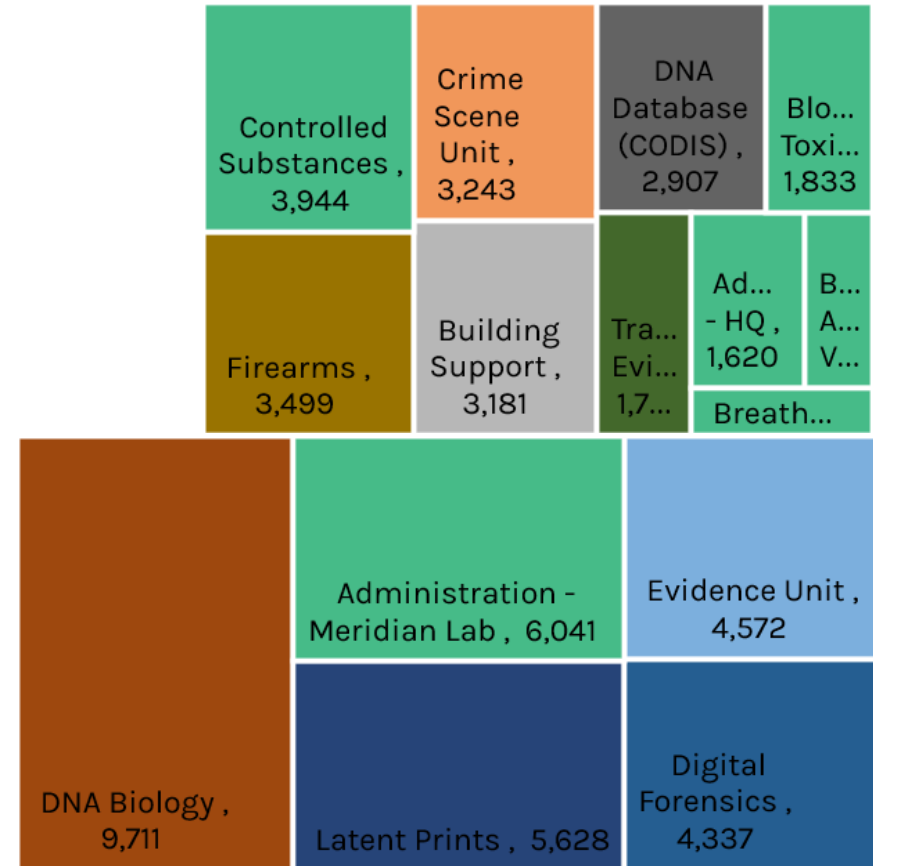
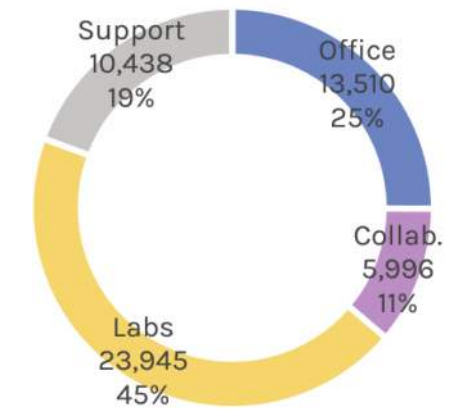
Building Support	Staff	Total NSF	Total NASF	Original NASF	Total GSF
Building Support	0	3,181	3,181	2,386	
Sub-total NSF and NASF	0	3,181	3,181	2,386	
Grossing at		60%			5,302

PH 1 - DNA+LP	PH 2 - Evid+CSU
-	-
15,312	43,731
2,302	2,302
17,613	46,033

-	-
-	-
-	-
-	-
-	-

-	1,500
-	1,462
-	1,365
-	838
-	3,927
-	4,337
7,028	1,798
-	2,907
-	-
1,675	2,977
-	-
484	3,736
-	1,392
9,187	26,239
15,312	43,731

1,381	1,381
1,381	1,381
2,302	2,302



ADMIN HQ

Idaho State Police Combined Labs									
Administration - HQ									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	SD SF	Comments
Office									
Lab System Director	1	160	1	160	1.3	208		209	
Deputy System Director	1	160	1	160	1.3	208		0	phase 3
Management Assistant	3	100	3	300	1.3	390		0	phase 3
Quality Manager	2	140	2	280	1.3	364		0	phase 3
LIMS/IT Admin.	1	100	1	100	1.3	130		0	phase 3
Sub-Total	8			1,000			1,300	209	
Collaboration									
Medium Conference		200	1	200	1.0	200		0	phase 3
Reception		120	1	120	1.0	120		0	phase 3
Sub-Total	0			320			320	0	
Laboratory									
Sub-Total	0			0			0	0	
Educational									
Sub-Total	0			0			0	0	
Support									
IT Workroom		120	0	0	1.0	0		0	
Personnel Files		120	0	0	1.0	0		0	
Copy / Supply		60	0	0	1.0	0		0	
Coffee Station		60	0	0	1.0	0		0	
Sub-Total	0			0			0	0	
TOTAL	8			1,320			1,620	209	

FORENSIC NURSING

Idaho State Police Combined Labs									
Forensic Nursing									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	SD SF	Comments
Office									
Section Supervisor	1	120	1	120	1.3	156		129	Technology to stream video for training and acoustic segregation due to sensitive material
Forensic Nurse	3	100	3	300	1.3	390		0	Technology to stream video for training and acoustic segregation due to sensitive material - included in main entrance admin areas
Sub-Total	4			420			546	129	
Collaboration									
Sub-Total	0			0			0	0	
Laboratory									
Sub-Total	0			0			0	0	
Educational									
Mock Exam Room		240	0	0	1.0	0		0	Similar to hospital exam space, programmed as a shared space with equipment that could be moved into space.
Sub-Total	0			0			0	0	
Support									
Victim Response Storage		120	0	0	1.0	0		0	
Training Storage		180	1	180	1.0	180		214	Near lab vehicle parking entrance, storage of SAK's, HD Storage and fixed large storage.
Copy / Supply		120	0	0	1.0	0		0	Space can be shared - Layout space for class packet assembly
Sub-Total	0			180			180	214	
TOTAL	4			600			726	343	

ISCCI HQ

Idaho State Police Combined Labs									
Idaho State Cold Case Initiative									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	Original SF	Comments
Office									
Team Lead	3	120	3	360	1.3	468		0	phase 3
Investigator	12	100	12	1,200	1.3	1,560		184	2 captured in SF, 10 in phase 3
Support Staff	8	100	8	800	1.3	1,040		0	Includes geneology - phase 3
Sub-Total	23			2,360			3,068	184	
Collaboration									
Sub-Total	0			0			0	0	
Laboratory									
Sub-Total	0			0			0	0	
Educational									
Sub-Total	0			0			0	0	
Support									
Sub-Total	0			0			0	0	
TOTAL	23			2,360			3,068	184	

ADMIN MERIDIAN LAB

Idaho State Police Combined Labs									
Administration - Meridian Lab									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	Original SF	Comments
Office									
Forensic Lab Manager	1	140	1	140	1.3	182		231	
Deputy Lab Manager	1	120	1	120	1.3	156		175	
Sub-Total	2			260			338	406	
Collaboration									
Multi-Purpose Room		0	1	0	1.0	0		0	
Medium Conference Room		700	2	1,400	1.0	1,400		759	20-30 People - only 1 in plan
Small Conference Room		0	0	0	1.0	0		0	Digital Testimony is acceptable for this function
Digital Testimony		240	0	0	1.0	0		0	Acoustically separated
Training Conference Room		1,485	1	1,435	1.0	1,588		1,588	130 People that can be configured as lab space, (1) FH w/ casework, divisible
Small Group Training Room		242	4	968	1.0	968		0	Allows (1) for the nursing team to have a hospital room setup - Includes digital testimony - phase 3
Production Break-Out Space		120	4	480	1.0	480		0	Allows sections to gather outside the lab and discuss the week - phase 3
Sub-Total	0			4,283			4,436	2,347	
Laboratory									
Sub-Total	0			0			0	0	
Educational									
Mock Court Room		0	0	0	1.0	0		0	
Sub-Total	0			0			0	0	
Support									
Long Term Records Storage		784	1	784	1.0	784		0	High Density Storage - combined with casefile storage
Training Storage		242	1	242	1.0	242		214	Allows tables and chairs to be moved out of training room, space for instrumentation sized tables (not lab benches)
Training Warming Kitchen		120	0	0	1.0	0		0	Adjacent to the training
Copy / Supply		60	2	120	1.0	120		57	Distributed per level
Coffee Station		60	0	0	1.0	0		0	
Fitness		360	0	0	1.0	0		0	
Case Files		120	0	0	1.0	0		0	70 Boxes today, but may go digital
Supply storage		121	1	121	1.0	121		0	Copier, consumables, office supplies, SAK/Tox kit assembly counter, some HD storage - phase 3
Sub-Total	0			1,267			1,267	271	
TOTAL	2			5,810			6,041	3,024	

BLOOD ALCOHOL VOLATILES

Idaho State Police Combined Labs									
Blood Alcohol Volatiles									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	Original SF	Comments
Office									
Section Supervisor	0	120	0	0	1.3	0		0	Shared with BAC
Discipline Lead	0	0	0	0	1.3	0		0	Shared with BAC
Lab Analyst	2	100	2	200	1.3	260		183	
Sub-Total	2			200			260	183	
Collaboration									
Sub-Total	0			0			0	0	
Laboratory									
Lab Vestibule		121	1	121	1.0	121		96	
Pending Evidence		121	1	121	1.0	121		0	Free-standing refrigerators - combined w/ evidence storage
Blood Alcohol Extraction Lab		484	1	484	1.0	484		632	(2) Workstations, BSC @ each, (1) Freezer, (2) lockable refrigerators dedicated to the individual staff, (2) BSC in U-shaped, EWES - 1/2 in tox
Instrumentation		242	0	0	1.0	0		387	H2, CA, HE, Biowaste bin, consumable storage, (2) GC Headspace (Combined with Tox Instrumentation on 12.19.2023) - combined w/ tox
Sub-Total	0			726			726	1,115	
Educational									
Sub-Total	0			0			0	0	
Support									
Gas Cylinder Room		60	0	0	1.0	0		164	BA: Empties and fulls, H2, He. (Combined with Tox on 12.19.2023) - all cylinders combined
Sub-Total	0			0			0	164	
TOTAL	2			926			986	1,462	

BLOOD TOXICOLOGY

Idaho State Police Combined Labs									
Blood Toxicology									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	SD NASF	Comments
Office									
Section Supervisor	1	120	1	120	1.3	156		129	
Discipline Lead	1	120	1	120	1.3	156		134	
Lab Analyst	1	100	1	100	1.3	130		83	
Sub-Total	3			340			442	346	
Collaboration									
Sub-Total	0			0			0	0	
Laboratory									
Lab Vestibule		121	1	121	1.0	121		0	(1) Refrigerator and freezer for evidence transfer - combined w/ BA
Pending Evidence		121	0	0	1.0	0		0	
Accessioning		242	0	0	1.0	0		0	
Toxicology Extraction Lab		726	1	726	1.0	726		632	Extraction in (3) 6' FH's (with positive pressure manifold and dryer), (1) BSC, EWES, (1) (U-shaped preferred) workstation for the Randox, (1) Refrigerator for Randox kits, (1) Freezer for tox reagents/kits, (3) refrigerators for evidence - Potential adjacency benefit for shared walk-in, drug reference liquids in extraction - 1/2 in BA
Toxicology Instrumentation		484	1	484	1.0	484		387	TOX: (2) LC, (1) GC, storage for instrument parts and mobile-phases. BA: H2, CA, HE, Biowaste bin, consumable storage, (2) GC Headspace (Combined on 12.19.2023) - 1/2 SD area in BA
Reagent Prep		242	0	0	1.0	0		0	
Controlled Substances		242	0	0	1.0	0		0	
Consumable Storage		242	0	0	1.0	0		0	
Sub-Total	0			1,331			1,331	1,019	
Educational									
Sub-Total	0			0			0	0	
Support									
Gas Cylinder Room		60	1	60	1.0	60		0	Tox: Empties and fulls, He, N2 (cylinders for drying), N2 generated locally instruments BA: Empties and fulls, H2, He. (Combined 12.19.2023) - all cylinders combined
Sub-Total	0			60			60	0	
TOTAL	3			1,731			1,833	1,365	

BREATH ALCOHOL INSTRUMENT CALIBRATION

Idaho State Police Combined Labs									
Breath Alcohol Instrument Calibration									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	Original SF	Comments
Office									
Section Supervisor	1	120	1	120	1.3	156		174	
Discipline Lead	1	120	1	120	1.3	156		156	
Calibration Analyst	1	100	1	100	1.3	130		79	
Sub-Total	3			340			442	409	
Collaboration									
Sub-Total	0			0			0	0	
Laboratory									
Lab Vestibule		121	0	0	1.0	0		0	
Pending Instrument		0	0	0	1.0	0		0	
Instrument Calibration Area		242	1	242	1.0	242		429	Pass-through at end of Instrument Calibration Area 120v @ 1' OC, Pass-trough at end of space, counters for calibration with storage above/below, height adjustable benching open below and pedestals, CPU workarea, in-process instrument storage, temperature control is a consideration based on daylight and large fluxuations, shared linear process for workflow, sink, eyewash, cabinets for gas calibration cylinders
Sub-Total	0			242			242	429	
Educational									
Officer Training Space		240	0	0	1.0	0		0	Can be part of the calibration area.
Sub-Total	0			0			0	0	
Support									
Gas Cylinder Room		60	0	0	1.0	0		0	Storage included in the main calibration space. FES will still handle instruments to barcode and intake, not needed to be dedicated
Agency Interface Space		120	0	0	1.0	0		0	
Sub-Total	0			0			0	0	
TOTAL	3			582			684	838	

CONTROLLED SUBSTANCES

Idaho State Police Combined Labs									
Controlled Substances									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	Original SF	Comments
Office									
Section Supervisor	1	120	1	120	1.3	156		125	
Discipline Lead	1	120	1	120	1.3	156		122	
Lab Analyst	7	100	7	700	1.3	910		683	
Sub-Total	9			940			1,222	930	
Collaboration									
Sub-Total	0			0			0	0	
Laboratory									
Lab Vestibule		121	1	121	1.0	121		189	2 in plan
Pending Evidence		121	0	0	1.0	0		0	
Central Chemistry Lab		1,089	1	1,089	1.0	1,089		1,803	(4) 6' FH (CA or N2 for evaporation), balance & locker / Analyst station; (4) large case lockers, (2) standing package sealers, (1) benchtop sealer, explosion-proof fridge, freezer, oven, (1) oversized sink, DI Water, (3) presumptive instruments (IR) on shared benches, tall glassware storage, below-counter chemical storage
Large Case Exam		242	1	242	1.0	242		243	Enough space to layout a bedsheet and lock for a case in process - only 1 in plan
Small Case Exam		121	0	0	1.0	0		0	
Meth Quantification		484	1	484	1.0	484		509	6' FH, bench for grinding meth, drying large sheets, fixed balance table, EWES, overhead storage, sink, homogenizer will induce vibration to the structure.
Chemistry Instrumentation		726	1	726	1.0	726		772	Space for HPLC, (5) GCMS, He, H2
Lab Consumable Storage		121	0	0	1.0	0		0	
Sub-Total	0			2,662			2,662	3,516	
Educational									
Sub-Total	0			0			0	0	
Support									
Gas Cylinder Room		60	1	60	1.0	60			Empties and fulls, H2, He, CA/N2 - all cylinders combined
Sub-Total	0			60			60	0	
TOTAL	9			3,662			3,944	4,446	

DIGITAL FORENSICS

Idaho State Police Combined Labs									
Digital Forensics									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	Original SF	Comments
Office									
Section Supervisor	2	120	2	240	1.3	312		205	
Discipline Lead	1	120	1	120	1.3	156		163	
Digital Analyst	17	36	17	612	1.3	796		769	Could be considered as an open work environment - 15 on plan
Sub-Total	20			972			1,264	1,137	
Collaboration									
Court Testimony		120	2	240	1.0	240		226	
Sub-Total	0			240			240	226	
Laboratory									
Evidence Breakdown		121	1	121	1.0	121		118	Two benches that need to be cleanable, includes a 4' FH
Analyst Station		110	6	660	1.3	858		662	
Analyst Station - ISP		110	6	660	1.3	858		661	
Analyst Station - AG Task Force		110	5	550	1.3	715		661	
Fume Hood Alcove		121	0	0	1.0	0		0	
Electronic Processing		121	1	121	1.0	121		108	Faraday shielded room
Case Lockers		242	0	0	1.0	0		0	Incorporate storage into the individual station
Sub-Total	0			2,112			2,673	2,210	
Educational									
Sub-Total	0			0			0	0	
Support									
Secure Server Room		160	1	160	1.0	160		161	(1/2) Rack of storage currently, (2) full racks would be prudent to plan around.
Sub-Total	0			160			160	161	
TOTAL	20			3,484			4,337	3,734	

DNA BIOLOGY

Idaho State Police Combined Labs									
DNA Biology									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	Original SF	Comments
Office									
Section Supervisor	3	120	3	360	1.3	468		352	
Technical Lead	1	120	1	120	1.3	156		101	
Lab Analyst	20	100	20	2,000	1.3	2,600		1,723	
Sub-Total	24			2,480			3,224	2,176	
Collaboration									
Sub-Total	0			0			0	0	
Laboratory									
Lab Vestibule		121	2	242	1.0	242		94	only 1 on plan
Pending Evidence		121	0	0	1.0	0		0	Adjacent to evidence cooler
Evidence Cooler		242	1	242	1.0	242		0	Walk-In CER - no longer cooler, now evidence storage - combined w/ DNA
DNA Examination Lab		2,904	1	2,904	1.0	2,904		3,006	(20) Stations, 5' fume hood - includes expansion
Extraction Lab		484	1	484	1.0	484		509	Could be open to examination, (1) freezer and refrigerator, EZ-1 equipment - sequencing
Pre-PCR		363	1	363	1.0	363		684	(3) Refrigerators & freezers, liquid handler, pass-through to Post-PCR
Post-PCR		484	1	484	1.0	484		485	(1) Refrigerator & freezer
Reagent Prep		121	1	121	1.0	121		121	DI Water polisher, fume hood, shared with CODIS
ALS Exam Large		363	2	726	1.0	726		1,255	Locking to maintain chain-of-custody, allows evaluation of a king-sized sheet, customizable lighting - 5 total large rooms
ALS Exam		121	5	605	1.0	605		254	Locking to maintain chain-of-custody, allows evaluation of smaller items, customizable lighting
Rapid Library Prep		121	1	121	1.0	121		0	Dedicated room - not on plan
Analysis Room		195	1	195	1.0	195		242	
Sub-Total	0			6,487			6,487	6,650	
Educational									
Sub-Total	0			0			0	0	
Support									
Sub-Total	0			0			0	0	
TOTAL	24			8,967			9,711	8,826	

DNA CODIS

Idaho State Police Combined Labs									
DNA Database (CODIS)									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	Original SF	Comments
Office									
Section Supervisor	1	120	1	120	1.3	156		125	Virtual CODIS access for all offices
Technical Lead	1	120	1	120	1.3	156		128	
Lab Analyst	6	100	6	600	1.3	780		489	
Sub-Total	8			840			1,092	742	
Collaboration									
Sub-Total	0			0			0	0	
Laboratory									
Lab Vestibule		121	2	242	1.0	242		94	only 1 in plan
Pending Evidence		121	0	0	1.0	0		0	Not required
Accessioning		242	1	242	1.0	242		229	(3) Workstations w/ barcode printer, and 6' of space for organizing samples
Pre-PCR		484	1	484	1.0	484		604	EZ-1, (3) 6' automated puntcher w/ CPU zones, (3) pipetting stations @ 6', large bench centrifuge, some extractions but don't need a full lab, (1) refrigerator and freezer, minimum space for (3) FTE to be there at once
Post-PCR		242	1	242	1.0	242		241	Automated DNA/RNA analyzer systems (3500xl) be located
Reagent Prep		121	0	0	1.0	0		0	Shared with DNA and carried there
Long-Term Sample Storage		605	1	605	1.0	605		500	HD Storage 4X Existing storage
Sub-Total	0			1,815			1,815	1,668	
Educational									
Sub-Total	0			0			0	0	
Support									
Sub-Total	0			0			0	0	
TOTAL	8			2,655			2,907	2,410	

FIREARMS

Idaho State Police Combined Labs									
Firearms									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	Original SF	Comments
Office									
Section Supervisor	1	120	1	120	1.3	156		121	
Discipline Lead	1	120	1	120	1.3	156		121	
Lab Analyst	1	100	1	100	1.3	130		93	
QD Analyst	1	100	1	100	1.3	130		82	no QD on plan, assuming Lab Analyst?
Sub-Total	4			440			572	417	
Collaboration									
Sub-Total	0			0			0	0	
Laboratory									
Lab Vestibule		121	2	242	1.0	242		0	One for main lab and one vestibule into range/tank, storage for ammunition - phase 3
Pending Evidence		121	1	121	1.0	121		0	Currently, there are a large quantity of hand-guns, but many rifles as well - phase 3
Firearms Open Lab		726	1	726	1.0	726		0	Benchtop Latent Processing Chamber, (1) workstation / analyst including a table, reference material, (2) 6' FH, in-process evidence storage, SNR can occur in open lab FH, EWES, workbench - phase 3
Comparison		121	2	242	1.0	242		0	Shared comparison scopes, 3D scanner station - phase 3
Reference Collection		363	1	363	1.0	363		0	Current collection in Region 1 is (60) long-guns, 100 handguns, HD Storage for firearms - phase 3
Firing Range		662	1	662	1.0	662		0	Single lane, adequately sized width, but not needing ejection distance analysis. Rubber blocks with shotgun shield. - phase 3
Bullet Tank		363	1	363	1.0	363		0	60" Tall tank - phase 3
Ammunition Storage		242	0	0	1.0	0		0	
Chemical Processing		242	0	0	1.0	0		0	Main lab
Workshop		242	0	0	1.0	0		0	
NIBIN Workstation		208	1	208	1.0	208		127	(2) NIBIN Workstations, accessible to outside jurisdictions
Sub-Total	0			2,927			2,927	127	
Educational									
Sub-Total	0			0			0	0	
Support									
Sub-Total	0			0			0	0	
TOTAL	4			3,367			3,499	544	

LATENT PRINTS

Idaho State Police Combined Labs									
Latent Prints									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	Original SF	Comments
Office									
Section Supervisor	2	120	2	240	1.3	312		130	Space for (2) scanners, (2) monitors, and CPU
Discipline Lead	1	120	1	120	1.3	156		127	Space for (2) scanners, (2) monitors, and CPU
Lab Analyst	11	100	11	1,100	1.3	1,430		917	Space for (2) scanners, (2) monitors, and CPU
Sub-Total	14			1,460			1,898	1,174	
Collaboration									
Sub-Total	0			0			0	0	
Laboratory									
Lab Vestibule		121	1	121	1.0	121		212	
Pending Evidence		121	1	121	1.0	121		0	Have a diversity of size and type of evidence, lockers with a variety of sizes - oversized items will be checked out seperately
In-Process Evidence Storage		121	0	0	1.0	0		0	Needed or in the main lab with the examiners? Mix of large and small storage lockers.
Latent Prints Chemical Laboratory		1,815	1	1,815	1.0	1,815		2,219	In-process evidence storage (tall, double-door locker), (1) 8' and (1) 4' (3) 6' FH w/ wide sink (1) 6' w/ full sink, (7) Stations, DI water, handwashing sink, dishwasher, chemical storage - includes expansion
Fuming Chambers		121	1	121	1.0	121		0	Open to Chemical Laboratory
Powder Laboratory		484	1	484	1.0	484		484	(7) Downdraft powder stations, layout space
Digital Imaging Exam		242	4	968	1.0	968		484	(1) Camera station, ALS cart, rolling ladder / space - 3 rooms, 1 large can be split to make 4 total
Analysis Room (Shared)		242	0	0	1.0	0		0	Covered in the DNA room
Reagent Prep Room		242	0	0	1.0	0		0	Adequate capacity in Chemical Lab
Sub-Total	0			3,630			3,630	3,399	
Educational									
Sub-Total	0			0			0	0	
Support									
MBIS Room		100	1	100	1.0	100		79	Multimodal Biometric Identification System exists in the office zone and is organized as a workstation
Sub-Total	0			100			100	79	
TOTAL	14			5,190			5,628	4,652	

TRACE EVIDENCE

Idaho State Police Combined Labs									
Trace Evidence									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	Original SF	Comments
Office									
Section Supervisor	1	120	1	120	1.3	156		0	phase 3
Discipline Lead	1	120	1	120	1.3	156		114	GP shows but it was 0 quantity in Excel?
Lab Analyst	0	100	0	0	1.3	0		0	
Sub-Total	2			240			312	114	
Collaboration									
Sub-Total	0			0			0	0	
Laboratory									
Lab Vestibule		121	1	121	1.0	121		0	Includes pending evidence - phase 3
Pending Evidence		121	0	0	1.0	0		0	
Trace Open Lab		484	1	484	1.0	484		0	phase 3
Exam Room		121	2	242	1.0	242		0	phase 3
Standards Room		121	0	0	1.0	0		0	
GSR Lab		121	1	121	1.0	121		0	phase 3
SEM Room		242	0	0	1.0	0		0	
Trace Instrument		363	1	363	1.0	363		0	phase 3
Sub-Total	0			1,331			1,331	0	
Educational									
Sub-Total	0			0			0	0	
Support									
Gas Cylinder Room		60	1	60	1.0	60		0	all cylinders combined
Sub-Total	0			60			60	0	
TOTAL	2			1,631			1,703	114	

EVIDENCE UNIT

Idaho State Police Combined Labs									
Evidence Unit									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	Original SF	Comments
Office									
Section Supervisor	1	120	1	120	1.3	156		0	
Discipline Lead	1	120	1	120	1.3	156		190	
Evidence Specialist	4	100	1	100	1.3	130		460	
Sub-Total	6			340			442	650	
Collaboration									
Sub-Total	0			0			0	0	
Laboratory									
Sub-Total	0			0			0	0	
Educational									
Sub-Total	0			0			0	0	
Support									
Officer Entry Vestibule		64	1	64	1.0	64		0	Security to allow authorized access - combined w/ vestibule
Officer Lobby		242	1	242	1.0	242		289	(2) CPU workstations, packaging space
Visitor Toilet		62	1	62	1.0	74		62	
Case Consulting		121	1	121	1.0	121		0	Space for outside groups to view evidence - combined w/ conference
Transfer Station		484	1	484	1.0	98		557	Interface between Officers and Specialists, handwashing sink w/ EW
Transfer Station - Internal		60	1	60	1.0	0		98	Interface between Analysts / Scientists and Specialists, mailboxes for scientists
Casefile Storage		726	1	726	1.0	726		0	Paper storage will always be needed but will not grow. HD Storage - COMBINED W/ MERIDIAN LAB
Liftcard Storage		242	1	242	1.0	242		0	Fingerprint cards allows access from the scientific sections. HD Storage. Locate near Latent Prints - COMBINED
Vault - Dry Storage		1,936	1	1,936	1.0	1,936		2,142	Includes Faraday caged area for electronics, (2) shipping tables w/ CPU, monitors to view security feed on the doors and grant access
Vault - Refrigerated Storage		242	1	242	1.0	242		214	Accessible from Vault - Dry Storage
Vault - Freezer Storage		242	1	242	1.0	242		208	Accessible from Vault - Dry Storage
Pass-Thru Lockers		143	1	143	1.0	143		0	Dry and refrigerated pass-throughs for scientific staff access, access to chemistry lab for pass-throughs - COMBINED W/ LATEN VEST.
Supply storage		121	0	0	1.0	0		0	Copier, consumables, office supplies, SAK/Tox kit assembly counter, some HD storage
Sub-Total	0			4,564			4,130	3,570	
TOTAL	6			4,904			4,572	4,220	

CRIME SCENE UNIT

Idaho State Police Combined Labs									
Crime Scene Unit									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	Original SF	Comments
Office									
Section Supervisor	1	120	1	120	1.3	156		0	PHASE 3
Discipline Lead	1	120	1	120	1.3	156		0	PHASE 3
Investigators	3	100	3	300	1.3	390		0	PHASE 3
Sub-Total	5			540			702	0	
Collaboration									
Sub-Total	0			0			0	0	
Laboratory									
Reagent Prep Room		121	1	121	1.0	121		132	4' FH, EWES, chemical storage cabinets, sink
Sub-Total	0			121			121	132	
Educational									
Sub-Total	0			0			0	0	
Support									
Gear Room and Consumable		242	1	242	1.0	242		242	Cabinets and open shelving for gear bags / pelican cases, other equipment, cameras, adjacent to the garage space, multiple circuits for charging, potential for HD storage
Consumable Room		121	1	121	1.0	121		0	Combined with the Gear Room
Laundry Alcove		121	1	121	1.0	121		0	Refrigerator w/ residential W/D - accessible to the entire lab - PHASE 3
Garage		968	0	0	1.0	0		0	Space for (1) vehicle
Vehicle Processing		968	2	1,936	1.0	1,936		1,986	Space for (1) vehicle, portable lift, fuming setup, FH, floor drains w/ covers, hands-free double-basin sink, mobile tables, specialty lighting from multiple elevations, sink
Sub-Total	0			2,420			2,420	2,228	
TOTAL	5			3,081			3,243	2,360	

BUILDING SUPPORT

Idaho State Police Combined Labs									
Building Support									
Space Name	Staff	NSF	Qty.	Total NSF	Mult.	NASF	Total NASF	Original SF	Comments
Office									
Facilities Office		0	0	0	1.3	0		0	
Sub-Total	0			0			0	0	
Collaboration									
Break Room		1,000	1	1,000	1.0	1,000		734	Ice machine, filtered water station, (4) refrigerator/freezers, (4) microwaves, space for vending, dishwasher, dish drying
Sub-Total	0			1,000			1,000	734	
Laboratory									
Sub-Total	0			0			0	0	
Educational									
Sub-Total	0			0			0	0	
Support									
Building Security		120	0	0	1.0	0		0	
Lobby Vestibule		80	1	80	1.0	80		131	Requires phone/speaker to speak with visitors
Building Lobby		500	1	500	1.0	500		424	
Personal Health Room		80	2	160	1.0	160		77	Staff may use their offices
Locker Room		1,100	1	1,100	1.0	1,100		738	Includes locking toilet stalls, shower, and changing rooms, dust shelf or recessed in wall. (1) 1/2 locker per staff, with full-height for CSI.
Loading Alcove		100	1	100	1.0	100		71	Property goes to the ISP warehouse first.
Chemical Storage		121	0	0	1.0	0		0	(3-5) Bins removed every other week
Biological Waste		121	1	121	1.0	121		76	
Custodial Storage		120	1	120	1.0	120		135	
Laundry Room		60	0	0	1.0	0		0	Part of the Crime Scene Program
Outdoor Covered Parking		0	10	0	1.0	0		0	Covered outdoor parking for nurses cars, investigations, etc. Conduit for future chargers & convenience power and vehicle cleaning
Outdoor Covered Staff Break		0	1	0	1.0	0		0	
Sub-Total	0			2,181			2,181	1,652	
TOTAL	0			3,181			3,181	2,386	

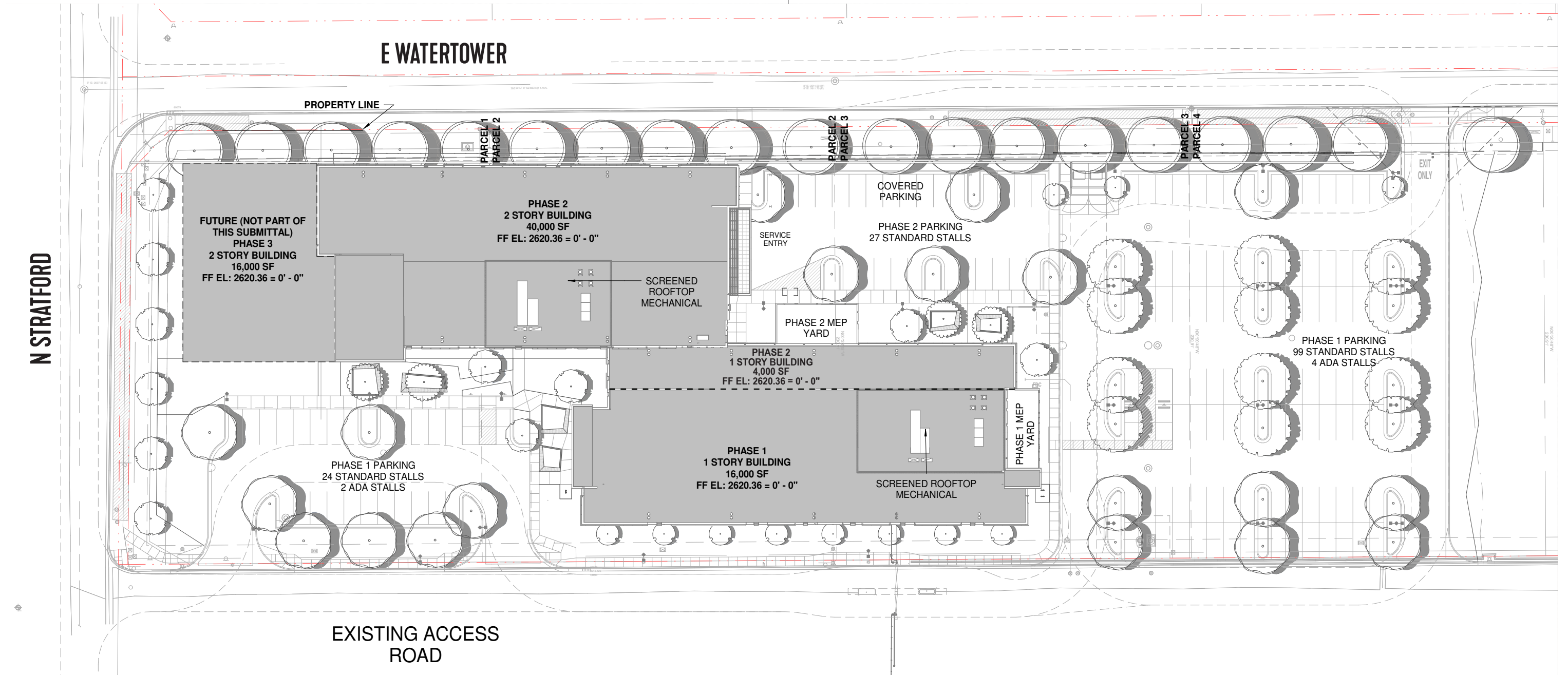


Ada County Coroner's Office - Break Area

SECTION 06

PLANS & RENDERINGS

OVERALL SITE



FLOOR PLAN - LEVEL 1

PHASE 1 & PHASE 2

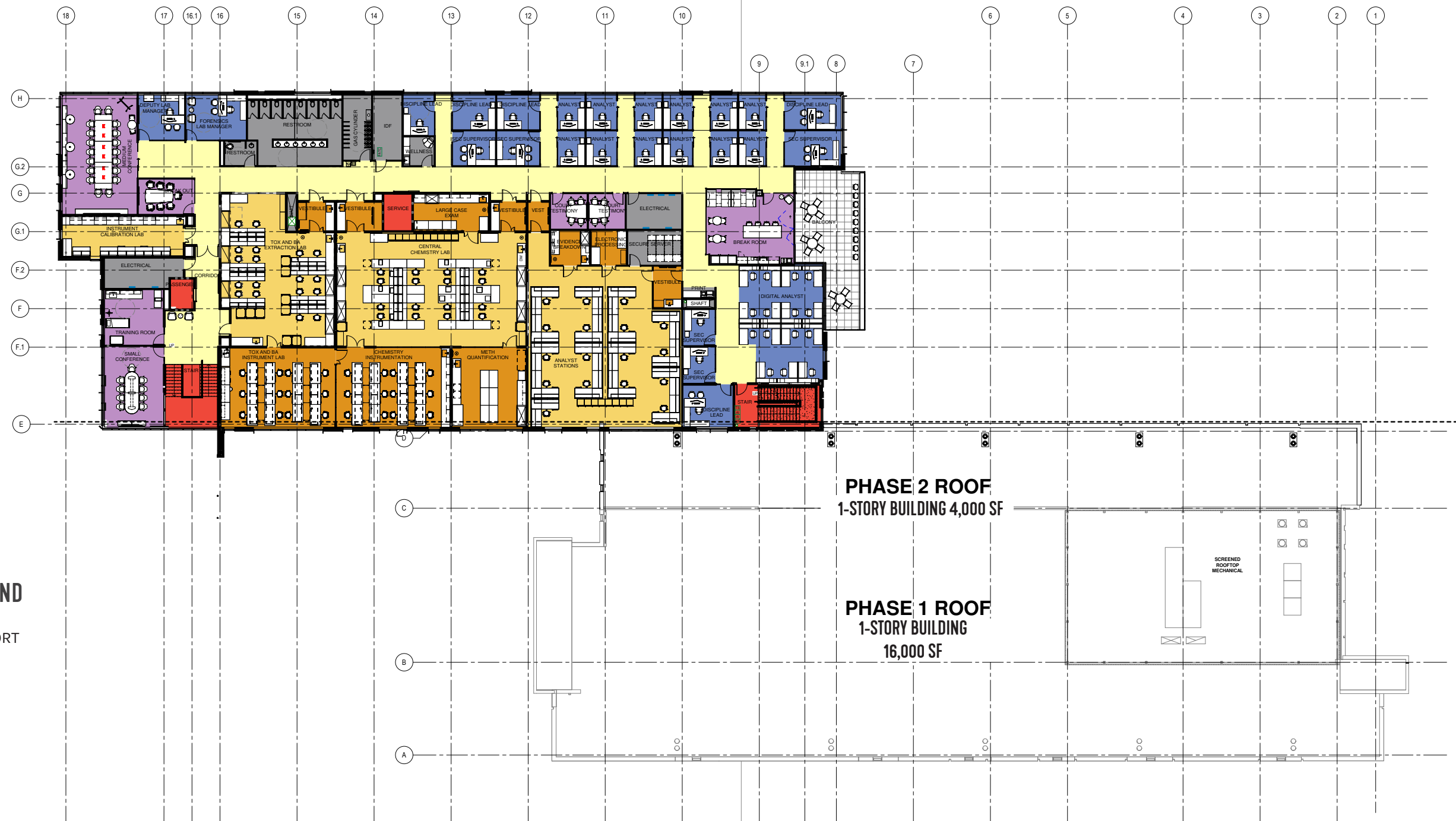


DEPARTMENT LEGEND

- BUILDING SUPPORT
- CIRCULATION
- COLLABORATION
- LAB
- LAB SUPPORT
- PRIVATE OFFICE
- VERTICAL CIRCULATION

FLOOR PLAN - LEVEL 2

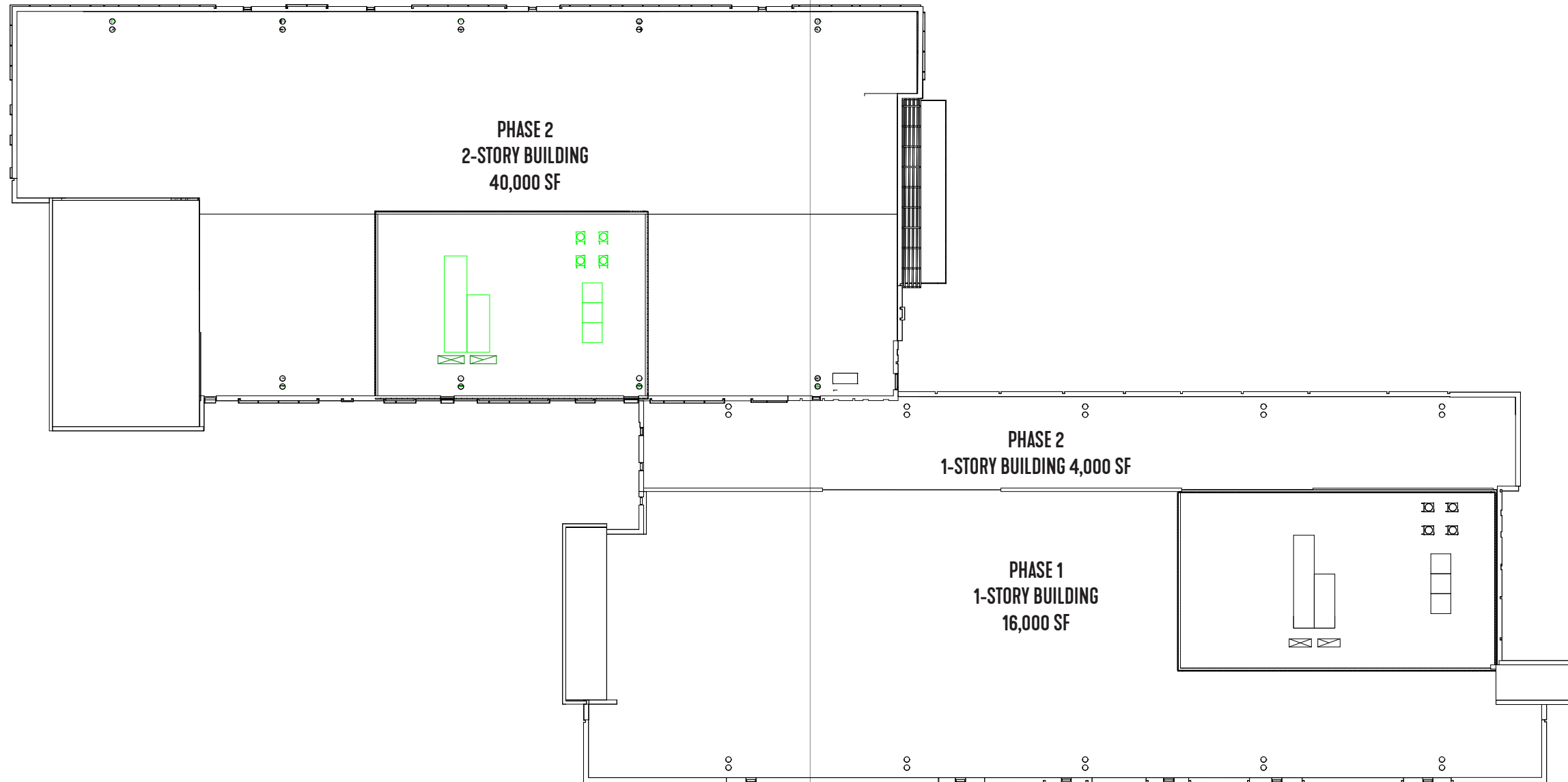
PHASE 2



DEPARTMENT LEGEND

- BUILDING SUPPORT
- CIRCULATION
- COLLABORATION
- LAB
- LAB SUPPORT
- PRIVATE OFFICE
- VERTICAL CIRCULATION

ROOF PLAN PHASE 1 & PHASE 2



SOUTHEAST AERIAL



NORTHEAST AERIAL



SOUTHWEST ENTRY



EAST BALCONY



WEST ELEVATION



EAST ELEVATION



NORTHWEST VIEW



SOUTH-SOUTHEAST VIEW



SOUTHWEST VIEW



SOUTHWEST VIEW



EAST VIEW



SECTION 07

DESIGN NARRATIVES

ARCHITECTURAL NARRATIVE

The new Idaho State Police (ISP) Forensic Services Crime Lab at the southeast corner of N Stratford Dr. and E. Watertower St. on the ISP Campus is the latest addition to the State's crime prevention capabilities. This location provides convenient adjacency to the existing lab which will continue to operate and house lab sections not moved to the new building. The site has improved visibility to the community and is an opportunity for the lab to express its civic identity as both a trusted criminal justice asset and as a best-in-class forensic science institution.

EXTERIOR DESIGN

The architectural character of the facility will be civic in nature; conveying the quality and integrity of the work the Crime Lab performs for the community. The project will complement and elevate the architecture of the campus, taking cues from recent state projects and other successful regional architecture to an architectural experience that inspires. In addition, the design will comply with state standards and lessons learned from an operations and maintenance perspective.

The scale, mass, and form of the building is driven by the ideal programmatic arrangement of spaces and the workflow between sections within the lab. The two-story lab, built in 3 phases, will ultimately create the ideal workflow defined in the perfect diagram with the initial first phase single-story building housing Latent, DNA and Lab offices. The unique needs of the lab spaces will continue to drive the building massing and articulation in the façade elements. The two-story building will create the space adjacencies established in the perfect diagram exercise and preserve site area for the required security thresholds and parking. The roof heights will be right sized to accommodate the required ceiling heights and building system needs of the ceiling plenum, this will be further optimized as the design develops in future phases. Roof system elements will be strategically screened with a formed metal panel screen wall that compliments the architectural design. Simplicity and economy of means will inform the architecture with a sustainable response to climate and site, balancing interior daylight and views with a calibrated response to the local climate of Boise.

Effective planning for forensic facilities is consistently based around the staff, visitor, property & evidence, and law enforcement vehicular and pedestrian circulation and workflows. The design will have clarity of both vehicular and pedestrian circulation on the site and within the building creating a safe and efficient environment. A sensitivity towards these different workflows often requires separation of these unique pathways and spaces, providing physical barriers and visual screening as necessary. The building entry points serving the unique building users define the site and first floor planning and avoid short-circuiting of the unique workflows. These connections between the interior and exterior spaces of the building provide the different users with appropriate secure access and experiences within the building.



Hamilton County Coroner and Crime Lab Exterior



Travis County Medical Examiner Staff Terrace

The site has been designed to accommodate (3) phases of building construction and (2) phases of site construction including 152 parking spaces, a service entry, and egress drive aisle from E. Watertower. It will allow for pedestrian and vehicular connection between the new facility and existing lab. The existing security gate will be maintained for separate visitor and secure parking. Within the secure parking area on the east side of the building staff and investigator entries are located adjacent to their assigned parking for convenient access. Two vehicle bays in phase 2 at the northeast side of the building providing a secure location for Investigation's vehicle inspection and processing. The northeast side of the building also accommodates 12 covered parking stalls. A detailed site and landscaping narrative has been included in this document.

The main entry will radiate a strong community presence for visitors and law enforcement dropping off evidence. Transparency at the main entry vestibule and conference room will convey a sense of accountability and safety while visual and acoustical screening protects the sensitive work that takes place within the rest of the building.

The exterior of the new facility will feature a performance-driven façade design informed by its orientation, and interior program. The architecture will include a strong and solid masonry base that will be durable and acoustically isolated aiding lab operations and state maintenance. This base will include glazing where programmatically appropriate for lighting and views, balancing concerns for security and visibility. Spandrel panels or solid wall assemblies will be integrated where visibility is not desired. The upper body of the building façade will incorporate tonal terracotta panels and glazing with sunshades that respond to the interior program providing ample daylight while mitigating glare and heat-gain within the lab spaces. The north facing façade of the 2nd floor offices will incorporate floor to ceiling glazing to maximize views and indirect daylighting of the office space.

The phase 2 double-height lobby at the west main entry of the building will include a metal composite panel roof overhang to create the defining architectural feature of the facility. The use of architectural shading elements and roof overhangs throughout the facility will increase the performance of the façade and help the building achieve established energy performance targets. Furthermore, these features will deflect direct sunlight from entering the building, provide covered entries and in combination with interior blinds and / or frosted glazing, mitigate glare within the spaces. Where appropriate to the program, natural daylighting will be provided for both employee well-being and to supplement electric lighting. The phase 2 break room includes an occupiable balcony on the east side. The balcony opens into the break room through a sliding glass partition allowing for staff to have their lunch on the terrace or for larger group events.

To provide the state with a cost conscious, long-lived building envelope; durable materials with a low life-cycle cost will be utilized for the building. The design team will incorporate input from the state on lessons-learned and performance track records of materials used on other state projects. Meticulous detailing of these materials will create an architecture that compliments the cutting-edge forensics sciences of the Crime Lab.



ISP Forensic Services - southwest entry view

INTERIOR DESIGN NARRATIVE

The following architectural design narrative describes the basic interior architectural work to be performed and materials to be provided for the Idaho State Police Forensic Science Lab in Meridian, Idaho.

DESIGN PRECEDENT

Building off the exterior Architectural DNA, the interior design draws inspiration from the Meridian Lab's work and the surrounding mountainous landscape. The new forensic lab honors the scientists' refined protocols, systemic repetition, and pursuit of justice for Idaho. Idaho features rich forests, lakes, and high desert plains. The color palette reflects this contrast, incorporating jewel emerald tones, earthy bronze metals, and warm sandy neutrals. The architecture is clean and sophisticated, with organized patterns mirroring the forensic work.

DNA OF COMMUNITY YOU SERVE



DNA OF ISP FORENSIC SERVICES



INTERIOR GENERAL CONDITIONS

PARTITIONS

Partition Heights: Assume all partitions go up to the deck.

Office Partitions:

3-5/8" and 6" metal stud partitions with 5/8" gyp, sound batt insulation, and acoustic sealant at the base and head. Provide Level 4 smooth drywall finish with drywall primer of high quality/high solids before the application of final paint. Any walls to receive graphic wallcovering to provide Level 5 finish.

Lab Partitions:

6" metal stud with 5/8" gyp. Provide Level 4 smooth drywall finish with drywall primer of high quality/high solids prior to the application of final paint.

Operable Partitions - Solid

MFG: Modernfold

Style: Encore Series, STC 56

Finish: Fabric, Markerboard, or Plastic Laminate, to be determined in next phase.

*Manual operation, provide structural allowance above ceiling to support.

Operable Partitions - Glass

MFG: Nanowall or equal

Style: Sliding, STC 43

Finish: Aluminum frame with glass

*Provide structural allowance above ceiling to support, manual operation.

PAINT

Paint quality and specifications for primer and paint to be equal to:

Sherwin Williams:

1st coat - Enso low odor/zero-enso 00 primer

2nd & 3rd coats - Suprema eggshell, spma30

2nd & 3rd coat in wet areas - Suprema semi-gloss, spma30.

Soffits

1st coat - Enso low odor/zero-enso 00 primer

2nd & 3rd coats - Suprema flat, spma10

Epoxy Paint

Prime: 1 Coat PPG SPEEDHIDE@ Interior Latex Quick-Drying Sealer 6-2

Finish: 2 Coats PPG PITT-GLAZE@WB1 Interior Eggshell Pre-Catalyzed Water-Borne Acrylic Epoxy 16-310

DOORS

Doors at offices to be 8'-0" tall glass door with 6" aluminum stile, sliding barn door soft close and acoustic sweep. (Frame to be incorporated in storefront system).

Doors at conference rooms to be 8'-0" tall glass doors with 6" aluminum stiles, and swing door. (Frame to be incorporated in storefront system).

Doors at Lab spaces to be 8'-0" tall HPL solid core door, hollow metal frames. Refer to floor plan for door sizes; varies. Assume half the doors will have a glass lite. Uneven pairs and double doors to be HPL solid core door, hollow metal frames.

All other front-of-house doors to be 8'-0" x min. 3'-0" wood veneer solid core doors with aluminum frames.

All back-of-house doors to be 8'-0" x min. 3'-0" hollow metal doors and frames.

All doors/frames into elevator lobbies to include smoke seals.

At rated partition provide rated assembly hollow metal doors and frames.

GLAZING

All interior glazing systems to be 9'-0" high x full width shown in plans, low profile demountable glazing system. Provide allowance for glass privacy film at ALL interior glazing locations.

Manufacturer: Falkbuilt or Allegion (or equal)

System: Kai Glass Wall or AD Systems Insetslide

Mullion: low profile, 2.25" depth, either centered or offset TBD in next phase

Color: Bronze

Glazing: 12 mm butt glazed glass, tempered, clear low iron finish

CEILINGS

Refer to RCPS and Renderings in drawing set for further detail.

Open Ceilings

Exposed structure with organized systems. Ductwork in open ceilings to be round and rigid. If ductwork is required to be insulated, it should be interior insulated at areas of exposed ductwork. All open ceilings, ductwork, conduit, cable tray, etc to be organized prior to install. Paint all exposed ceiling elements.

ACT Ceilings

Provide axiom trim at all ceiling clouds as shown in RCPs. All hanger wires, above ceiling utilities to be kept out of site above ceiling clouds.

24"x24" or 24" x 48" ACT Ceiling:

Manufacturer: USG

Panel: Mars .75 NRC/35 CAC

Profile: Square Edge

Grid: DX 15/16" grid

24x24 or 24x48 Metal Acoustic Ceiling:

Manufacturer: USG or equal

Panel: Celebration Snap In

Profile: 2x4 panel

Grid: 1/4" grid

Metal Ceiling Baffle:

Manufacturer: USG or equal

Panel: Barz

Profile: Square Edge

Open Cell Corridor Ceiling:

Manufacturer: Armstrong

Type: Metalworks Open Cell

Profile: 24x24, 8" Cell, Square Lay in

Grid: DX 9/16" grid

Color: Bronze

FLOORS

See individual Room descriptions for more information. Provide metal Schluter, Futura, Gradus or equal transition at all floor finish transitions

Carpet Tile: Plank Carpet Tile

At all areas of carpet provide 4" straight rubber base (Roppe or Equal)
Provide ADA compliant rubber transition strips to match carpet color where carpet transitions to concrete.
Provide moisture barrier where required.

Polished concrete floors

Finish: class D grind, Level 3 sheen
Provide 4" straight rubber base (Roppe Pinnacle Plus #00 Simplicity or Equal) where noted on finish plans
For all sealed concrete locations, hard trowel, detergent clean and seal.

LVT: 4mm Luxury Vinyl tile

Minimum 28 mil wear layer with Diamond 10 Technology finish, Techtonic finish and Quantum Guard Elite finish or equal
At all areas of LVT provide 4" straight rubber base (Roppe Pinnacle Plus #00 Simplicity or Equal)
Provide ADA compliant rubber transition strips to match carpet color where carpet transitions to concrete.

Tile: Porcelain floor tile

At all areas of tile provide 6" straight tile base with Schluter Jolly trim
Provide ADA compliant Schluter transition strips where tile transitions occur
Allow for uncoupling membrane with thick setting bed for large format floor tiles.

Resinous Poured Flooring

Poured Epoxy flake system, Stonhard Stontec (3 color flake) or equal
Poured Terrazzo Flooring
Poured in place thin-set epoxy terrazzo flooring, custom medallion inset, multi color mix w/ intricate detail. Refer to drawing set renderings for further information.

WALLS

Refer to drawing set for more information.

Acoustic Wall Panel

Panels to be a recycled PET material, direct adhesion method, with 1/8" reveal joints between panels.
Provide Fry Reglet, Futura or equal at exposed edges along perimeter. Panels to vary in texture at locations.

Manufacturers: Filz Felt Ribsy, Arktura Soft Sound, Artizin, Ezo Board, or equal

Porcelain and Ceramic Tile

Provide Schluter aluminum trim and transitions between surfaces to match tile finish color. At floor to wall tile transitions, provide Schluter Dilex cove transition.

Wall Protection

Corner guards will be located in subsequent design phase. All outside corners in high traffic areas at office and collaboration spaces to receive 4' H PVC or stainless steel corner guard treatment. Lab spaces to receive 8' H stainless steel 3-4" corner guard treatment. Provide allowance for ADA compliant 6" stainless steel wall protection at back of house locations on all levels. Janitor closets to receive FRP paneling at wet areas.

Manufacturer: Acrovyn, Inpro, or Equal

WINDOW COVERINGS

Provide manual rollershades at all exterior windows (Mechoshade Soho 3% Openness, Draper, SWF or equal) and blackout shades at technical spaces/offices. (MFG: Mechoshade Chelsea, Draper, SWF or equal).

PRIVACY AT OFFICE LOCATIONS [2 Options, to be determined in next project phase]:

Commercial Drapery: Commercial grade, stain repellent, launderable drapery fabric with 2' drapery wand, concealed curtain track. (Fabric Architex, Maharam, Wolf Gordon, or equal)

Glass privacy film: Full height Privacy Film at Offices

MILLWORK

Plastic Laminate Cabinetry and Countertops

All plastic laminate cabinets shall be AWI custom grade, flush overlay design, constructed from medium density particle board with thermofused melamine interiors.

Quartz Countertops

Manufacturer: Cambria Quartz, Corian or equal

Size: 3CM Thick slab w/ subtop, turn down dimensions TBD in later stage

Install: Provide waterfall edge at islands

Solid Surface

Manufacturer: Corian, Durasin or equal

Size: ½" thick slab, turn down dimension TBD in later stage.

Plastic Laminate:

Manufacturer: Formica HD, Wilsonart HD or equal

Type: Traceless, Solid Core, HD texture

Edgebanding: 3mm pvc matching edge band at counters, 2mm PVC matching edge band at cabinet doors and drawers

LABORATORY CASEWORK:

All laboratory casework shall be painted steel with Black or Light Grey lab grade countertops per each departments requirements. Fixed base cabinets shall be flush overlay design with white metal finish. Mobile base cabinets shall be flush overlay design with DI-NOC finish. Provide 6" x 4'-0" painted steel ceiling service panels to distribute (hanging) utilities to laboratory benches below. Provide painted metal lay in panel transition between each CSP. In locations where separation is required between worksurfaces, provide 3FORM Varia ½" Thick Panels w frame.

SPECIALTY AREAS

LOBBY STAIR

Custom structural steel stair case with exposed stringers. Stainless steel cable guardrail with metal supports. Stair riser and tread finish to be a polished precast concrete. Metal hand rail supports with solid wood handrail to be integrated within the guardrail.

ROOM TYPE + FINISH APPLICATION

LOBBY

Floors: Polished concrete floor, terrazzo medallion of logo at entryway, walk off carpet tile 10' in path of travel from the doors

Base: 4" Resilient Base or reveal base

Walls: Custom decorative wood slat wall w/ acoustic backer. Wood veneer wall paneling. Paint.

Custom Millwork: Concrete planter under stair w/ custom corian bench seat.

Ceiling: Gyp ceiling with paint. Large format ACT.

Lighting: Linear LED and round can pendant lights at Acoustic Drywall Ceiling. Linear uplight at decorative wall.

BREAKROOMS

Floors: Luxury Vinyl Tile

Base: 4" Resilient Base

Walls: Painted gypsum with decorative tile backslash at countertop - assume \$15/SF material. Vinyl Wall Covering - assume \$4/SF - full height. Smoke grey glass and privacy film at the perimeter.

Millwork: Plastic laminate base cabinet millwork, quartz countertop, undermount sink.

Ceiling: Specialty baffle ceiling, painted gypsum board soffits.

Lighting: Suspended linear LED pendant lights, recessed round downlights at soffits. Decorative LED light fixture at island.

LARGE TRAINING ROOM PHASE 2

Floors: Carpet Tile - Plank, resilient poured epoxy flooring at lab casework

Base: 4" Resilient Base

Walls: Tile backslash at countertop - assume \$15/SF material. Painted Gypsum walls. Acoustic Wall Panel, full height, at front of the room.

Ceiling: Acoustic Wood-look Baffle Ceiling, Painted Gypsum

Lighting: Suspended Linear LED, recessed LED downlights at gypsum ceilings.

COLLABORATION MEETING SPACES

Floors: Carpet Tile - Plank

Base: 4" Resilient Base

Walls: Vinyl Wall Coverings - assume \$4/SF material in conference room, Acoustical Wall Panel

Millwork: Plastic laminate base cabinet millwork, quartz countertop

Ceiling: Acoustic Wood-look Baffle Ceiling and Painted Gypsum. 2'x4' Acoustic Ceiling Tile at smaller huddles.

Lighting: Suspended linear LED pendant lights, recessed LED downlights, and semi-recessed linear LED at ACT ceilings.

PRIVATE OFFICE:

Floors: Carpet Tile - Plank

Base: 4" Resilient Base

Walls: Painted Gypsum walls

Ceiling: 24"x24" Acoustic Ceiling Tile

Lighting: Recessed linear LED

LABS AND LAB SUPPORT:

Floors: Poured Resinous flooring. Static dissipative resilient flooring at Digital Analyst stations.

Base: 6" Integral Cove Base, applied base at casework

Walls: Epoxy Painted Gypsum walls at DNA Lab/Lab Support, all other lab spaces Painted Gypsum. Accent wall with custom mural printed wall protection 3P Tec or equal.

Ceiling: 24" x 48" Acoustic Ceiling Tile, 24"x24" Metal Wood-look ceiling accent above benching, metal lay in panel to align with ceiling service panels.

Lighting: Suspended Linear LED, direct indirect lighting. Task lighting at casework.

CIRCULATION

Floors: Carpet Tile - Plank

Base: 4" Resilient Base

Walls:

Painted Gypsum walls

Vinyl Wall Covering - assume \$4/SF material along circulation

4ft height Tackable surface and glass markerboard along circulation

Electrical panels in corridor to be concealed by Whiteboard laminated MDF hinged panel, flush overlay with PVC edge banding.

Ceiling: Decorative Open Cell Suspended Ceiling Cloud, paint above - will be revisited in next design phase.

Lighting: Suspended Square LED pendant lights at decorative cloud

RESTROOMS

Floors: Porcelain Tile 24"x48", stack bond installation (Assume \$6/SF material)

Base: 6" Tile Base to match floor where there is no wall tile, Schluter Dilex

Wall:

Full height 12x24 Porcelain tile at all wet locations (Assume \$6 material only)

Provide accent tile at vanity wall (assume \$15 SF)

Painted gypsum walls

Ceiling: Painted gypsum ceiling

Millwork:

Provide undermount lavatories and Quartz counters with Sloan Optima hands free faucets and soap dispensers.

Provide backlit mirror at vanity with beveled edges, mirror mounted on millwork standoff to allow space for lighting

Accessories: Grab Bars & Restroom Partitions to be Bobrick or equal, Stainless Steel Floor mounted

BACK OF HOUSE/STAIR

Floors:

10"x40" Carpet Tile at storage

Polished Concrete at BOH and Stair

Base: 4" Resilient Base

Walls: Painted Gypsum

Ceiling:

Exposed ceiling

Gypsum ceiling at stairs

CIVIL NARRATIVE

TOPOGRAPHIC SURVEY

The project site will consist of 4 contiguous 1 acre lots with frontage on W. Watertower St. and S. Stratford Dr. in Meridian, ID. A topographic survey was provided by the Owner and was referenced to develop the Schematic Design Narrative and Civil Plans.

PROPERTY BOUNDARY ADJUSTMENT

A property boundary adjustment will be required to consolidate the (4) four lots that comprise the project site. The property boundary adjustment Record of Survey will be prepared by the project surveyor and be submitted to the City of Meridian for processing.

RIGHT-OF-WAY, EASEMENTS AND LANDSCAPE BUFFERS

Concepts for project right-of way and easement needs were assessed and are summarized below. Note that all easement needs may not be included in the summary, and that the need for additional easements may arise as a result of future design.

Existing Public Utilities, Drainage and Irrigation Easement: The project site has an existing 10-foot wide public utility, irrigation and drainage (PUID) easement located along the S. Stratford Dr. frontage, and a 15-foot wide PUID easement along the E. Watertower St. frontage and a 10-foot wide PUID easement along the rear lot lines adjacent to the existing ISP Campus.

City of Meridian Water Easement: The City of Meridian will require that easements be dedicated for City owned water system improvements located onsite, outside of the public right-of-way. The specific easement needs are unknown at this time and will be determined as a result of project design.

City of Meridian Sewer Easement: The City of Meridian will require that easements be dedicated for City owned sewer system improvements located onsite, outside of the public right-of-way. The specific easement needs are unknown at this time and will be determined as a result of project design.

Ada County Highway District Right of Way Dedication: The S. Stratford Dr & E. Watertower St. frontages are currently built out with curb, gutter and sidewalk. Additional right-of-way dedication or frontage roadway improvements are not anticipated.

Landscape Buffers: The City of Meridian requires a 20-foot-wide landscape buffer along both the S. Stratford Dr. and the E. Watertower St. frontages. The landscape buffer is measured from the back of sidewalk for the existing attached sidewalk configuration. Up to a 50% reduction in the landscape buffer width is allowed if the landscape buffer is a Water Conserving Design in accordance with the City Code.

GEOTECHNICAL INVESTIGATION

A geotechnical investigation has not yet been performed and will be required to evaluate the site geotechnical conditions. The geotechnical report should include recommendations for earthwork, retaining walls, bearing capacity values, depth to groundwater, design infiltration rates, test pit logs, flexible and rigid pavement sections and structural fill recommendations.

SITE TOPOGRAPHY AND GRADING

A schematic design grading plan was prepared for the site and is included with the schematic design civil engineering plans. There is a significant slope in the east-west direction across the two east lots that comprise the four-lot site. The parking lot to the east of the building is designed to slope downward to the west with slopes less than 5% to accommodate the grade differential. The visitors parking area to the west of the building has existing mild slopes and is designed with downward slopes less than 3%. All accessible parking stalls and sidewalks are designed to comply with ADA slope requirements. The site slopes downward from E. Watertower St. to the parking lot located on the east side of the building. Grade separation is required between the parking lot and W. Watertower St. that will be accomplished by a 2-foot to 3-foot-tall keystone block wall. The westerly limit of the keystone block wall will terminate at the east wall of the trash enclosure, which will be designed to retain slope. The future Phase 2 parking lot screen wall foundation will also be designed to retain the slope from E. Watertower St. to the Phase 2 parking lot and will terminate at the west wall of the trash enclosure.

UTILITY INFRASTRUCTURE

Sewer Service: The project site sewers to an existing 8-inch PVC sewer main line located within E. Watertower St. that is approximately 9-feet deep measured below the road surface. Record drawings indicate that a separate 6-inch sewer service is stubbed to each of the project site lots with the stub depth being approximately 5-feet below the existing grade at the right-of-way line. The sewer system record drawings do not identify specific sewer service invert elevations at the stub locations. A new sewer service will be tapped from the existing sewer located in E. Watertower St. The sewer service will be routed south from E. Watertower St. and be stubbed from plumbing connection at the north side of the building as shown on the Utility Plan. The sewer service stub depth at the building is approximately EL. 2614.99, which is 5.37 feet below the finished floor elevation of 2620.36. The plumbing engineer shall confirm that there is adequate gravity sewer service depth at the building stub location. All existing sewer stubs will not be utilized for the project – existing sewer services that are not utilized for Phase 1, or anticipated to be utilized for Phase 2, will need to be potholed and disconnected at the main line per the City's Standards.

Water Supply: There is an existing 10-inch water main located within E. Watertower St. along the north site boundary, an existing 12-inch water main located along the west site boundary within S. Stratford Dr. and an existing 8-inch water main located along the south site boundary on the existing ISP Campus. Record drawings for the Dee Jay Subdivision indicate that there are 8-inch water stubs to each of the project site lots located along the E. Watertower St. frontages. Existing water service stubs that will not be utilized for Phase 1, or anticipated to be utilized for Phase 2, will need to be potholed and disconnected at the main line per the City's Standards.

Fire Sprinkler Service & Hydrants: A fire flow request was submitted to the City of Meridian that indicates the available fire hydrant flow from the existing hydrants located along the site perimeter to be 2750 GPM at 20 PSI. A New fire sprinkler service will be tapped from the existing 8-inch water main located within the existing access road located along the south boundary of the site. The fire sprinkler service line will be routed from the main line tap to the fire riser room as shown on the Utility Plan. It is anticipated that the fire department connection (FDC) will be located on the exterior of the east wall of the mechanical yard screen wall at the east end of the building. In accordance with the Fire Code a new fire hydrant is located less than 100-feet from the FDC, at the northeast corner of the building. The final FDC and fire hydrant locations will be coordinated with the City of Meridian Fire Dept.

Domestic Water Service: Domestic water service lines, tiles and meters are currently not installed and will need to be constructed with the project improvements. A new water service is planned to be tapped from the existing 8-inch water main located within the existing access road located along the south boundary of the site. The new water meter will be located within the parking lot within a traffic-rated vault to provide access to the City of Meridian and be out of conflict with proposed landscaping and other underground utilities. A 20-foot-wide easement encompassing the new water meter will be dedicated to the City of Meridian as per the City's requirements. The water service and meter size will be determined based upon the demand to be provided by the plumbing engineer.

Backup (Fringe) Pressure Irrigation Supply: The City of Meridian requires that a back-up year-round irrigation supply is provided. A separate potable water meter will be installed to provide a back-up irrigation supply.

Storm Drain: The concept for onsite storm drain system is to route all onsite stormwater via pipe, or surface flow, to inlets and sand and grease traps for pre-treatment prior to discharge to subsurface seepage beds for storage and infiltration into the ground. Two seepage beds are planned for the project; one seepage bed within the visitor parking lot located to the east of the building, and one located within the parking lot to the east of the building as shown on the Utility Plan. The approach for storm drain disposal will need to be vetted against the geotechnical investigation to so that proper calculations can be prepared to size the facilities according to the site subsurface soil characteristics. Piped roof drain connections will be routed to the site storm drain system for roof drainage disposal once roof drain locations are determined.

Pressure Irrigation: There is a Nampa Meridian Irrigation District owned and operated pressure irrigation system that serves the site and overall commercial development. The existing pressure irrigation system distribution system includes a 4-inch pressure irrigation mainline located along the southerly site boundary from which there are existing pressure irrigation services stubbed to each of the four lots that comprise the site. Upgrades to the existing pressure irrigation supply and distribution system are not anticipated. The City of Meridian requires that a backup year-round irrigation supply is provided. A separate potable water meter will be installed to provide a back-up irrigation supply.

Natural Gas: Intermountain Gas has provided infrastructure mapping that indicates an existing 2-inch gas line located in E. Watertower St. and an existing 4-inch gas line in S. Stratford Dr. Gas services are currently stubbed to each of the four site lots along the E. Watertower St. site frontage. The project mechanical engineer will need to provide a gas demand for the project for evaluation of the gas service adequacy.

Power Service: A primary power sector box is located at the northeast corner of Lot 2 and Lot 4 along the site E. Watertower St. frontage. Secondary power improvements will need to be constructed with the project improvements. The project electrical engineer will need to coordinate with Idaho Power Company to initiate the power service design.

STRUCTURAL NARRATIVE

GENERAL OVERVIEW:

At your request, this office has analyzed various structural systems to be used for the wall framing, floor framing, roof framing, lateral force resisting system and foundation elements to be considered for the one and two story lab buildings to be located in Meridian, ID. Based on our review of various framing systems for this project, the following recommendations for the proposed structural framing systems to be used for this project have been based on various factors such as overall depth of the framing systems, availability, constructability, performance and cost. Parking covers may be included in the structural scope, but that is still TBD. The full build out of the project may occur in two separate phases.

FOUNDATION SYSTEM:

It is anticipated that the proposed building will be supported on a conventional cast-in-place concrete spread footings and/or continuous footings and stem walls around the perimeter of the building, with bottom of footing extending below frost depth. We anticipate that a 4 inch concrete slab on grade will be utilized for the typical slab on grade, and a 6-inch-thick reinforced concrete slab on grade being utilized in areas where high density filing, vehicles or equipment is to be located. All slabs will be placed over a vapor barrier to minimize future water/vapor infiltration into the slab from ground water conditions. Recessed slabs will be provided for thick-set tile, sloped floors, etc as required. All recommendations of the geotechnical report, to minimize differential settlement due to site soil conditions, will be reviewed, considered and implemented as needed.

It is understood that geotechnical requirements will be further coordinated during design based on the recommendations of the geotechnical report. Some significant items that may be required by the geotechnical report would include the possible need for over-excavation and/or structural fill below all footings and slabs on grade, or possibly a deep foundation system if deemed necessary.

FLOOR FRAMING:

The upper floor framing systems shall consist of regular weight concrete over a 20 or 18-gauge composite steel floor deck over a wide flange composite steel beam/joist system with the beam/joists spaced at 5 to 7 feet on center. Total thickness of the floor slab will be 5-1/2" to accommodate the necessary fire ratings. The referenced joist system shall be supported on composite wide-flange steel girder beams around the perimeter and on the interior as needed. The steel girder beams will be supported on structural steel columns around the perimeter and interior as needed. The depths of floor framing members will vary depending upon spans and/or applied loads. Expected beam depths may vary between 12" and 24". We anticipate the structural steel framing for the floors to weigh approximately 13.5 pounds per square foot. The weight of structural steel does not include the weight of the composite steel floor deck or the cold formed steel stud walls.

Framing layouts will be designed to accommodate a client requested 2,000 mips (micro inches per second) in vibration.

ROOF FRAMING:

The roof shall consist of 20 or 18 gauge steel roof deck supported by open web joists spaced at 5 to 7 feet on center, but will be further evaluated as design progresses. Roof joists will vary in depth depending on the span and applied loads. Anticipated joist depths will vary between 12" and 24". The referenced joist system shall be supported on wide-flange steel girder beams around the perimeter and on the interior as needed. The steel girder beams will be supported on structural steel columns around the perimeter and interior as needed. The depths of the roof girders will vary depending upon spans and/or applied loads. Expected beam depths may vary between 12" and 21". To minimize the need for excessive tapered insulation, the roof structure could be sloped. We anticipate the weight of the structural steel framing, for the roof framing, to weigh approximately 5.5 pounds per square foot. The weight of structural steel does not include the weight of the open web steel joists, the steel roof deck or the cold formed steel stud wall framing. At mechanical unit locations, the framing will match the floor system (concrete over metal deck) as described in the Floor Framing section of this narrative.

COLUMNS:

All columns are expected to be 6" or 8" HSS columns, but wide flanged sections may be a viable alternative.

EXTERIOR WALL CLADDING:

To enclose the building, the exterior walls will primarily consist of 6"x16 or 18-gauge non-bearing steel studs at 16" on center. Brick will be used throughout the perimeter and the foundation and framing will be designed accordingly.

LATERAL FORCE RESISTING SYSTEMS:

The lateral load resisting system shall primarily consist of Ordinary Steel Braced Frames which will be strategically located on the interior of the buildings and not located along perimeter walls.

DESIGN CRITERIA:

The design of the proposed building will incorporate appropriate codes and common standards of practice as specified in the 2018 International Building Code and applicable Idaho State and local jurisdictional modifications for both gravity and lateral (seismic/wind) design requirements. Additional design considerations for energy efficiencies, cost savings, reduced maintenance, future flexibility, available trades, material accessibility, etc. will be incorporated into the project.

PROPOSED LOADING CONDITIONS:

Snow Loads:

■ Risk Category:	III (IV could be a possibility, TBD)
■ Importance Factor (I)	1.0
■ Exposure Factor (C_e)	0.9
■ Flat Roof Snow Load (P_f)	25 psf
■ Thermal Factor (C_t)	1.0

Wind Loads:

■ Basic Wind Speed	115 mph (3 second gust) (Per city of Meridian)
■ Exposure	C
■ Internal Pressure Coefficient	+/- 0.18

Seismic Loads:

■ Risk Category	III (IV could be a possibility, TBD)
■ Importance Factor (I)	1.25
■ Soil Site Class	D
■ Mapped Spectral Response:	$S_s=0.289g$, $S_1=0.105g$
■ Soil Factor Coefficients	$F_a=1.569$, $F_v=2.39$
■ Design Spectral Responses	$S_{D5}=0.302g$, $S_{D1}=0.168g$
■ Seismic Force Resisting System	Ordinary Concentric Steel Braced Frames
■ Response Modification Factor (R)	3.0
■ Seismic Design Category (SDC)	C
■ Analysis Procedure	Equivalent Lateral Force Method

Dead Loads:

■ Roof	20 psf
■ Composite Steel Floor	63 psf
■ Mechanical/Equipment	Manufacturer provided weights

Live Loads:

■ Roof	20 psf
■ 1 st Floor Offices	50 psf
■ 1 st Floor Partition Loads	15 psf
■ 1 st Floor Corridors	100 psf
■ Typical Floor Framing above 1 st Level	80 psf
■ Designated Light Storage	125 psf

MATERIALS:

Concrete: 28-day strengths & types are as follows:

■ Footings	3,000 psi
■ Slab on grade (Interior)	4,000 psi
■ Slab on grade (Exterior)	4,500 psi
■ Stem Walls	4,500 psi

Concrete Masonry Units (if needed):

■ CMU walls (f'm)	2,000 psi
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Structural Steel:

- Structural steel "W" shapes shall comply to ASTM Standard A992
- Angles, plates "M" and "S" shapes, channels and bars shall comply to ASTM Standard A36, unless noted otherwise.
- Steel pipe shall comply to ASTM Standard A53 grade B (Fy = 35 ksi)
- Rectangular and square Hollow Structural Sections (HSS) shall comply to ASTM Standard A500 grade B (Fy = 46 ksi)
- Round Hollow Structural Sections (HSS) shall comply to ASTM Standard A500 grade B (Fy = 42 ksi)

Open Web Steel Joist:

- Steel joists shall conform to SJI CJ-1.0, SJI K-1.1, SJI LH/DLH-1.1 & SJI JG-1.1 published by the Steel Joist Institute (SJI)

Cold Formed Steel:

- Steel structural studs 18 ga. and thinner shall have yield strength; Fy = 33 ksi.
- Steel structural studs 16 ga. and thicker shall have yield strength; Fy = 50 ksi.

LANDSCAPE NARRATIVE

Below is a summary of the potential landscape design situations of the new Idaho State Police Forensic Crime Lab located at the southeast corner of N Stratford Drive and E Watertower Street.

EXISTING CONDITIONS

The site consists of an empty site currently enclosed by an existing chain-link fence with slats.

ACCESS

Primary pedestrian access will be from the southeast through an entry plaza for visitors and law enforcement. Two bike parking spaces will be provided at this main entry location. Employee access will be on the east side of the building. For phase 2, an additional employee point will be provided along the northeast side of the building. Four bike parking spaces will be provided at the employee east entrance.

COURTYARDS / AMENITY SPACES

The main amenity area on site will be the entry plaza on the southeast corner of the building. The current concept is to provide raised planters that will serve as a visually inviting space to the main entrance while also protecting the building from vehicles or other large moving objects from impacting the building. The raised planters will also incorporate seat benches to be utilized as a gathering space or pickup location for visitors. Materials used in this plaza will ensure to match the materials used on the building façade to create a unified look and feel.

As part of phase 2 a small plaza will be provided on the northeast side of the building for an employee lunch and break space. This small plaza will replicate the look and feel of the main plaza.

LANDSCAPE & IRRIGATION

Landscape areas will be designed to be low water use with minimal areas of lawn. The planting design will utilize different size rock mulch to give texture to the site through more than just plant material. The landscape buffers will be planted using water conserving measures approved by the City of Meridian to reduce the width of the buffer by 50%. The landscape area for Phase 2 will be recommended to be sterilized to prevent weed growth for use as a staging area for the build out of Phase 1 and will be planted at the time of construction of Phase 2. The Phase 3 building area will be proposed to be seeded with a low water use turf type grass that would require minimum maintenance and lower water use than traditional bluegrass style turf.

The irrigation system will be primarily drip irrigation to reduce water use with rotor or spray heads to be used minimally as needed.

FENCING

A wrought iron fence will be utilized between the landscape buffer and building to provide security to the sensitive information within the building.

LABORATORY PLANNING NARRATIVE

LABORATORY DESIGN CONCEPTS

Design requirements for forensic laboratories are unique and unlike other types of laboratory facilities. There are several overlapping primary objectives for these crime lab facilities that are useful in guiding the planning. These include:

Safety	Ensures a Safe Operation for both Staff and Visitors
Security	Facility and Chain-of-custody
Modularity	Space Allocation on Similar/Incremental Basis
Flexibility	Change Space Function and Size
Adaptability	Add and/or Delete Functions in Each Space
Serviceability	Durable Ease of Maintenance Ease of Installation Ease of Replacement
Efficiency	Flow of Evidence, Staff, and Material Space/Systems to Support Needs
Interactivity	Promotes Communication among its Users
Cost	Use of Appropriate Systems Where Required
Effectiveness	Wise/Balanced Use of Resources
Aesthetics	Looks Good When New and for Years to Come
Accreditation	Adheres to Agency Requirements

BUILDING FLEXIBILITY

Flexibility is an important component of a new forensic laboratory facility. For a facility to be flexible, planning for this concept began in the programming phase and will be maintained throughout final design and construction. A modular approach has been incorporated into the Schematic Design that strongly enhances assignment and re-assignment of space, while maintaining an orderly approach to the laboratory configurations and future expansion availability. In addition, the facility must be designed to embrace future changes in technology. Consequently, flexible distribution systems are also of paramount importance, some that can easily accommodate changes as well as additions to the services provided in each laboratory area.

To provide a flexible and effective facility that allows for changes in use or technology without the expenditure of significant resources, the following issues must be kept in mind:

Component location - Component location will determine how the facility will be organized and how space types will be grouped. It will reflect the desired space relationships and program adjacencies, ultimately defining the beginnings of the planning concept. Component location includes space relationships, location of program elements, location of mechanical / electrical spaces and stacking concepts.

Service Distribution - Service distribution within a facility greatly impacts flexibility. For a multi-storied facility like assumed in phase two, we are concerned with both the vertical as well as the horizontal distribution systems. The vertical systems bring the desired utilities to each floor from the mechanical, electrical and/or telecommunication rooms. The horizontal distribution systems carry the utilities to the individual spaces. Laboratory flexibility also considers accessibility to these utility distribution systems.

Casework / Workbench Systems - Selection of a flexible casework system when combined with the prescribed building module and an adequate vertical and horizontal distribution will assure a large degree of flexibility for all aspects of the laboratory. Fixed casework should be kept to a minimum and strategically located to minimize impact on future adaptability. Open laboratories should utilize a shared frame moveable bench system incorporating a vertical frame with adjustable shelving and integrated electrical and plumbing services (as required). These services should be connected to building systems via quick disconnects fed from ceiling service panels overhead. Laboratories for instrumentation or testing should utilize mobile instrument benches, no uprights, with utilities distributed via overhead service carriers.



Hamilton County Crime Lab Conference Room

INTERACTION AND COLLABORATION

To create a fully interactive and collaborative facility, program elements must relate to one another. Although we must create interactive laboratory and office blocks, spaces where the staff can formally or informally interact with each other are critical. Space types include:

Formal Interaction Spaces - these include conference rooms located near work areas and a large training room supporting the entire facility.

Informal Interaction Spaces - these include lunch/break room(s) and distributed interaction areas.

Providing systems that foster collaboration is imperative to staff productivity and foster an atmosphere of community. Programmed in the Phase 1 and 2 scopes are several interactive spaces that will foster the desired connectivity and collaboration.

MODULARITY

This program validation effort has recommended a building module for laboratory spaces. This modular approach has been utilized in the space allocation of the laboratory areas. In establishing this module, consideration was given to the multiple requirements of the various laboratory spaces, and the spatial needs associated with these requirements. A common module to support these various requirements was incorporated, allowing for flexibility in space re-assignment and configuration.

The laboratory module maximizes the space allocation by understanding the recognized functions in the lab. Laboratory spaces were sized utilizing the building basic "x" and "y" module of 11'-0" by 11'-0". Spaces will vary in size and have been planned in multiples of the basic module.

The wide range of space types necessary to support the breadth of laboratory environments required by different forensic disciplines creates a unique challenge. Stitching these spaces together, within a fabric that enables adaptability and meets adjacency demands, requires an understanding of that lab's unique makeup. Ensuring an efficient and secure flow of evidence both into and between sections within the facility is of critical importance. Providing opportunities for authorized tour groups to see what happens within the laboratory spaces without interfering with the work being conducted is a significant planning driver.

CONSTRUCTION

Doors: Provide an uneven leaf pair of doors consisting of one 36-inch and one 12-inch-wide door in areas where samples and equipment are present.

Floors: Shall be able to withstand chemicals present within the laboratory environment. Provide integral cove base in areas with fume hoods.

Ceilings: Heights shall provide a minimum of 10'-0" clear above the finished floor.

Wall protection: Corner guards will be #304 stainless steel.

Casework: Base cabinets, sink cabinets, upper cabinets, and tall cabinets shall be painted steel construction. Countertops shall be epoxy resin or phenolic (i.e., Traspa) with final selection based on future discussions with laboratory users.

Laboratory basis of design casework and equipment:

description	manufacturer	model
Casework	Mott Manufacturing	
Fume Hoods	Mott Manufacturing	Safeguard
Countertops	Durcon / Trespa	(TBD)
Cylinder Corral	JT Racking Systems	2D Series
Hazardous Storage Cabinets	Justrite	22 / 43 gallon
Point Exhaust	Movex	Terfu
Glassware Washer	Lancer	815 LX



San Diego County Sheriff's Crime Lab

PLUMBING NARRATIVE

PLUMBING DESIGN OBJECTIVE

The following narrative describes the plumbing work and materials to be provided for the new Idaho State Police Crime Lab. The project will be provided with plumbing systems that are cost-effective, energy-efficient, environmentally friendly, and easily maintainable. Strategies will be employed to conserve energy in conjunction with various sustainability and wellness strategies. The design of the plumbing system shall promote forward thinking in engineering and be flexible in design incorporating minimum requirements needed to ensure a safe and healthy building while applying guidelines to minimize environmental impact.

All plumbing systems shall be designed to promote reliability, serviceability, flexibility, and capacity for future renovation. Plumbing systems and equipment shall be sized to accommodate worst-case operational conditions. The design of the systems and materials shall not compromise the systems' required cleanliness or purity levels.

CODES AND STANDARDS

The latest version, or current adopted version, of the following codes and standards will be used as references in the electrical design of the building:

- 2018 International Building Code (IBC) with Amendments
- 2018 International Mechanical Code (IMC) with Amendments
- 2017 Idaho State Plumbing Code (ISPC) with Amendments
- 2018 International Energy Conservation Code (IECC) with Amendments
- 2017 National Electrical Code (NEC) with Amendments
- American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standards
 - ASHRAE 62.1 - Ventilation for Acceptable Indoor Air Quality
 - ASHRAE 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings
- American National Standards Institute (ANSI) Standards
 - 110 - Methods of Testing Performance of Laboratory Fume Hoods
 - Z9.5 - Laboratory Ventilation
- National Fire Protection Association (NFPA) Standards
 - 45 - Fire Protection for Laboratories Using Chemicals
 - 91 - Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Particulate Solids
- American Society for Testing and Materials (ASTM)
- Underwriters' Laboratories (UL)
- Sheet Metal and Air-Conditioning Contractors National Association (SMACNA) Standards

PLUMBING SITE UTILITIES

Plumbing site utilities consist of domestic cold-water supply, sanitary waste, storm drains and natural gas.



SYSTEMS METERING

Sub-metering of the plumbing systems shall be provided to the building to provide operations and maintenance transparency needed to enable efficient energy and water resource management.

SANITARY WASTE AND VENT

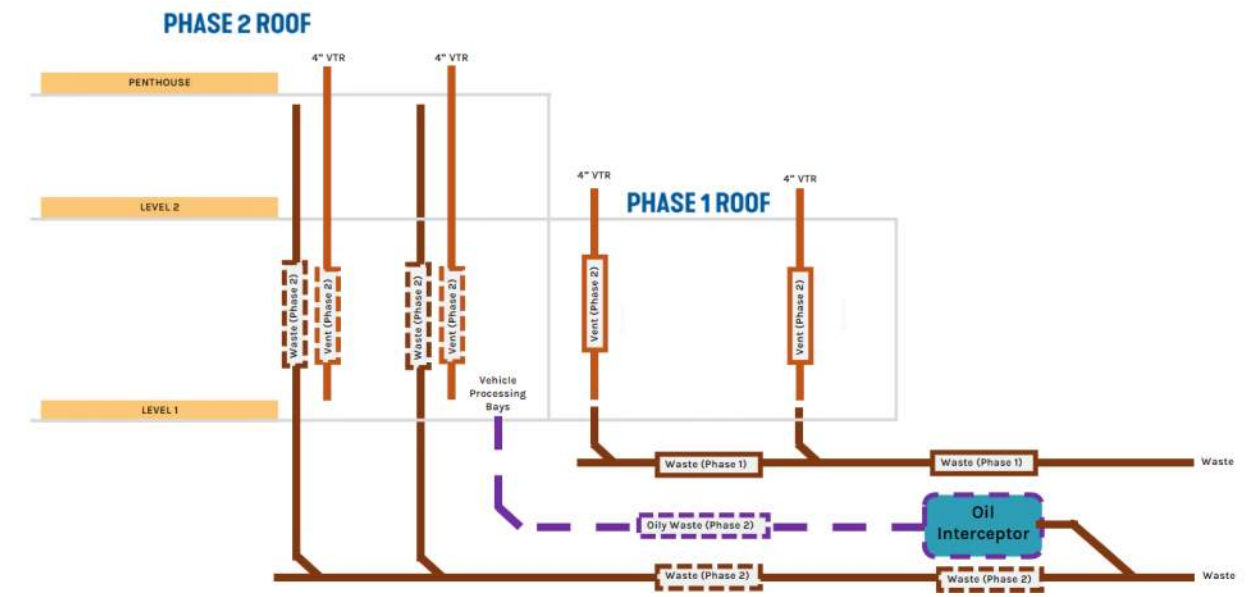
Phase 1 & Phase 2:

Approximately one 6" sanitary sewer drains will exit the building footprint underground and will be continued by civil to the municipal sanitary sewer as shown on site utility drawings. The sanitary waste and vent system will be provided for all plumbing fixtures, floor drains, and equipment drain in the building. Plumbing fixtures will be drained by gravity through soil, waste, and vent stacks and to 5 feet outside the building wall, where they will be picked up by civil. The building plumbing fixtures will be provided per the applicable code and will connect to a code-compliant sanitary waste & vent system. Two-way directional cleanouts will be provided at the building exterior.

All vents from plumbing fixtures shall extend to the roof and be located with a 25-foot clearance away from air intakes. Riser locations shall be at construction elements that are permanently unaffected by interior fit-out arrangements, providing maximum flexibility for future modifications and connections.

Sanitary Waste & Vent Piping Design Criteria	
Sizing	2017 Idaho State Plumbing Code (Based on 2015 UPC)
Piping Slope	Minimum 1/4" per foot
Pipe Material (Below Grade)	PE Encased hubless cast-iron pipe with CISPI 301 stamp, IAPMO UPC-approved service weight cast-iron, heavyweight no-hub couplings with 4-band stainless steel clamps.
Pipe Material (Above Grade)	Hubless cast-iron pipe with CISPI 301 stamp, and IAPMO UPC-approved service weight cast-iron, heavyweight no-hub couplings with 4-band stainless steel clamps.
Pipe Material (Pumped Waste)	ASTM B88 and ANSI/NSF 61 type 'K' hard drawn copper pipe and soldered/brazed joints

Phase 2 Specific - Phase 2 due to the vehicle processing bays shall have an Oily waste system with an oil interceptor located on site.



Sanitary Waste & Vent Diagram

ELEVATOR SUMP PUMP (PHASE 2 ONLY)

The elevator sump pumps shall be rated at 50 gpm flow per elevator cab. Duplex pumps will be provided at each pit with an "Oil Smart Switch" and will discharge indirectly via receptor to the sanitary sewer. The control panel for pumps and oil smart switches will be tied into the BMS system to activate the alarm in the case of hydraulic fluid in the pit.

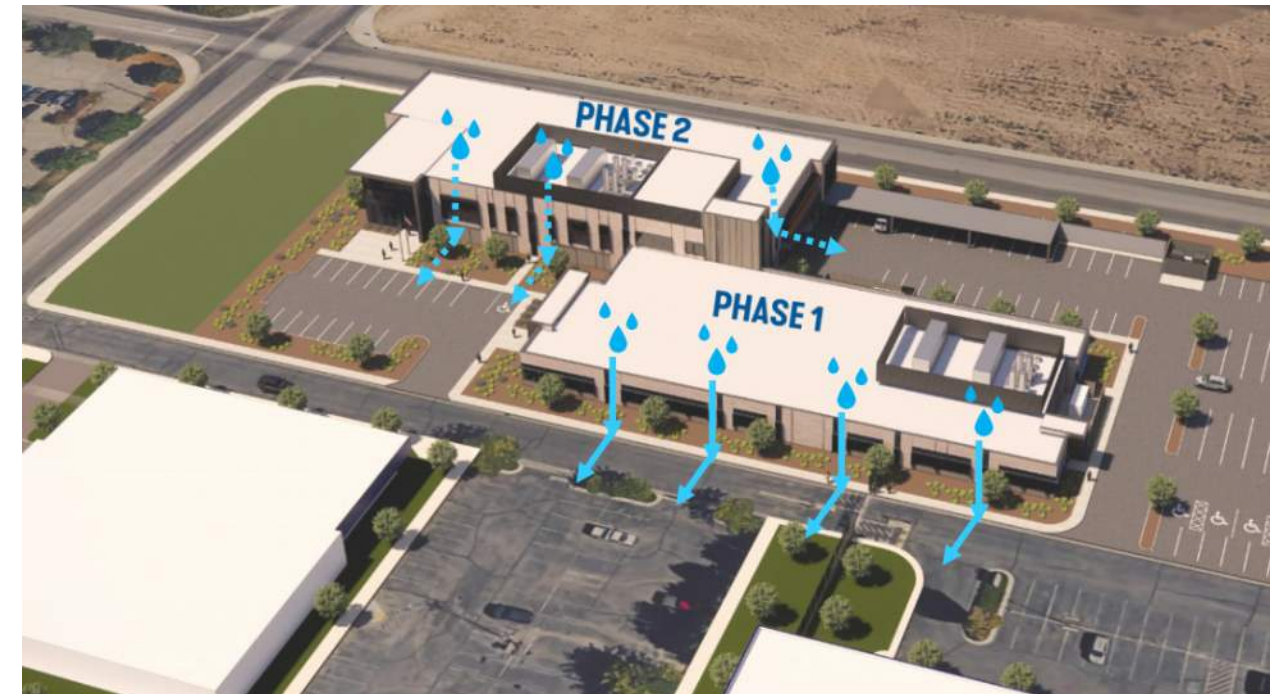
STORM DRAIN

A complete storm drainage system will be provided to convey rainwater from the roof of the building to some point of discharge exterior to the building. Overflow drains will be provided to convey emergency stormwater by gravity through a separate piping system discharging 2'-0" above grade utilizing downspout nozzles with bird screens.

Downspouts shall not be on the North and West side of the Phase 1 footprint to avoid being affected by the future phases.

Primary/Overflow roof drains and overflow downspouts shall be provided with heat trace to avoid freezing.

Storm Drain Piping Design Criteria	
Sizing	2017 Idaho State Plumbing Code (Based on 2015 UPC) Inches of Rainfall: 1.0" Approximate Building SF (Phase 1/1A): 20,000 SF Minimum (x3) 4" Storm Drain Exiting the Building
Piping Slope	Minimum 1/8" per foot
Pipe Material (Below Grade)	PE Encased hubless cast-iron pipe with CISPI 301 stamp, IAPMO UPC-approved service weight cast-iron, heavyweight no-hub couplings with 4-band stainless steel clamps.
Pipe Material (Above Grade)	Hubless cast-iron pipe with CISPI 301 stamp, and IAPMO UPC-approved service weight cast-iron, heavyweight no-hub couplings with 4-band stainless steel clamps. ASTM C1540, FM 1680 CLASS 1
Insulation	The entire storm and overflow system (including vertical piping and drain bodies) shall be insulated.



Storm Drain Diagram

DOMESTIC WATER

A new potable water cold-water service with a meter and backflow preventer located at the city main will serve the building. Deliver a minimum 35 psi at the most hydraulically remote fixture.

Shut-off valves shall be provided on all branch connections and equipment connections. Water-hammer arrestors with accessible isolation valves will be provided at quick closing valves and other potential shock sources. The Hammer arrestors will be sized and located per PDI standards.

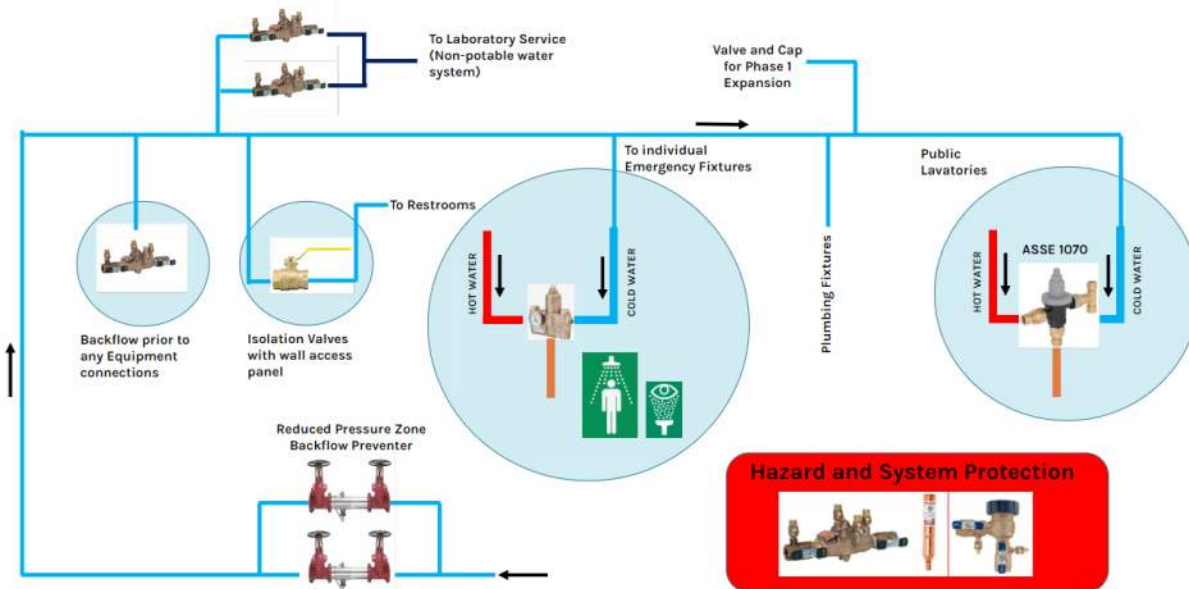
Provide hose bibbs on all exterior walls, mechanical equipment rooms, loading dock & accessible rooftops. Hose bibbs in public areas shall utilize common loose key enclosure boxes or loose key operators.

Provide isolation valves to facilitate independent shutdown at each floor, laboratory room, restrooms, and other locations as required such service and modifications may be performed without affecting other areas. Each equipment and plumbing fixture shall be provided with individual isolation valves, or fixture supply stops. For future connections for future phases, a full-size valve and cap shall be provided for future expansion.

The following known lab equipment shall be provided with a reduced pressure backflow preventor that shall be in a space to allow a RPZ Backflow Preventors to drain into an approved drain receptor and shall be provided for any similar equipment. If lab equipment is within the same vicinity, it is allowed to provide a single RPZ backflow preventer to serve multiple pieces of equipment:

- Glassware Washer
- Autoclaves
- Point of use Type 1 DI Polishers
- Point of use Type 3 DI Polishers
- Any lab equipment with a retractable hose that is long enough to touch the ground.

Domestic Water Piping Design Criteria	
Velocity (Cold Water)	Maximum 8 feet per second
Pipe Material (Below Grade)	Seamless copper tube, ASTM B88, Type K.
Pipe Material (Above Grade)	ASTM B88 and ANSI/NSF 61 type 'L' hard drawn copper pipe and soldered/brazed joints



Domestic Water System Diagram

Phase 1 vs Phase 2 - Phase 1 & 2 shall have separate water meters and backflow prevention devices connecting to civil.

DOMESTIC HOT WATER

The piping layout design shall be based on a loop system with valved branches to all rooms and sectional valves. Domestic hot water piping will be extended to all domestic plumbing fixtures.

Riser locations shall be at construction elements that are permanently unaffected by interior fit-out arrangements, providing maximum flexibility for future modifications and connections. Provide isolation valves to facilitate independent shutdown at each floor, laboratory room, restrooms, and other locations as required such service and modifications may be performed without affecting other areas. Each equipment and plumbing fixture shall be provided with individual isolation valves, or fixture supply stops.

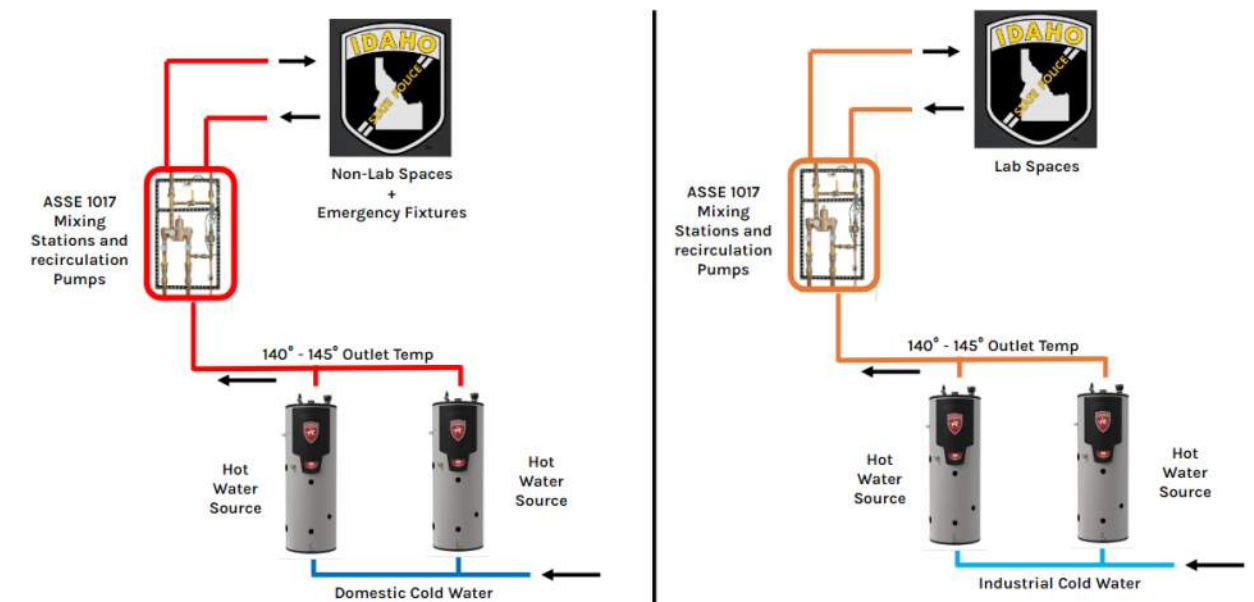
Domestic Water System:

1. Phase 1: (1) 125 MBH, 90 Gallon Natural gas storage-type water heaters at minimum will be provided.
2. Phase 2: (1) 125 MBH, 90 Gallon Natural gas storage-type water heaters at minimum will be provided.

Laboratory Water System:

1. Phase 1: (2) 125 MBH, 60 Gallon Natural gas storage-type water heaters at minimum will be provided.
2. Phase 2: (2) 125 MBH, 60 Gallon Natural gas storage-type water heaters at minimum will be provided.

The domestic hot water system will include circulation pumps and an expansion tank. A central thermostatic mixing station will be provided for hot water distribution. The Building Management System (BMS) will control the domestic hot water system components.



Domestic Hot Water System Diagram

Domestic Hot Water Piping Design Criteria	
Velocity (Hot Water)	Maximum 5 feet per second
Pipe Material (Below Grade)	Seamless copper tube, ASTM B88, Type K.
Pipe Material (Above Grade)	ASTM B88 and ANSI/NSF 61 type 'L' hard drawn copper pipe and soldered/brazed joints
Insulation	All hot water piping to be insulated.

EMERGENCY FIXTURES

Provide emergency fixtures to rooms where corrosive or hazardous materials are handled. Emergency shower and eyewash fixture shall be connected to domestic potable hot and cold water per ANSI Z358.1 and ASSE 1071 water tempering device. Isolation valves shall be labeled and locked open. Floor drains shall also be provided at each emergency shower/eyewash combination unit.

CONDENSATE DRAIN

Air conditioning condensate waste pipes shall connect indirectly to the drainage system through an air gap to properly vented floor sink. Condensate piping shall be type 'M' hard drawn, copper pipe and fittings with lead free solder joints. Pipe within the building shall be insulated.

Condensate Piping Design Criteria	
Sizing	International Plumbing Code
Piping Slope	Minimum 1/8" per foot
Pipe Material (Above Grade)	ASTM 88 and ANSI/NSF 61 type 'M' hard drawn copper pipe (Insulate within the building)

LEGIONELLA PREVENTION VS. TREATMENT ENCOURAGE

No deadlegs for future (as short as possible, valve and cap only). Provide hose valve connections at strategic locations near drains for flushing capabilities. Circulation of domestic hot water (at approx. 115 - 125 deg. F) for 24 hrs./day.

PLUMBING FIXTURES

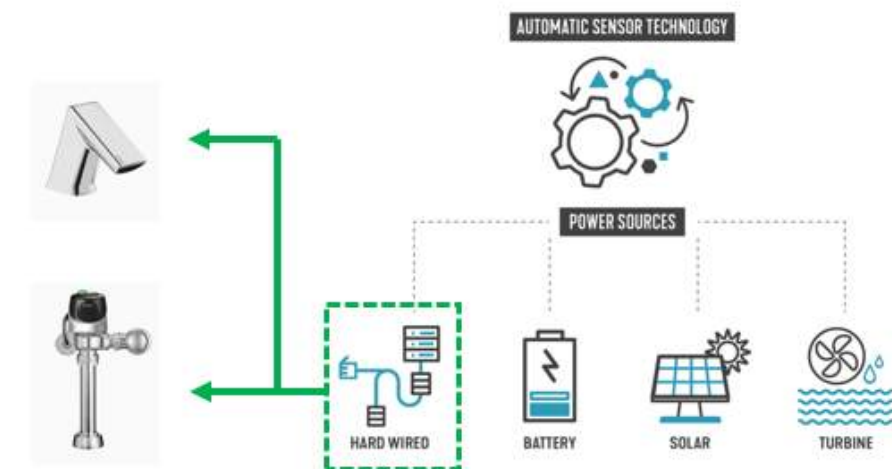
All applicable fixtures will meet the American Disabilities Act (A.D.A.) for accessibility. The design team will use advanced innovative, water-efficient plumbing fixtures to help attain water conservation goals. Plumbing Fixtures shall be highly efficient, decreasing total water demands without negatively impacting the quality of life.

The proposed plumbing bathroom fixtures will be touchless. Touch-free sensors conserve water, prevent runs-on, reduce indoor water use, and provide an enhanced bathroom experience.

Automated fixture energy source options:

- Hard-wired
- Solar cells
- Miniaturized turbines
- Battery

A hardwired sensor type fixture will be provided.



NATURAL GAS

A new gas line will be provided to the site by a local Gas Service Company. The meter and regulator will be supplied and installed by the Gas Company at the building. Gas service pipe will penetrate outside building wall above grade.

Natural Gas Design Criteria	
Natural Gas Serving the following Equipment	<ul style="list-style-type: none"> • Domestic Hot Water Heaters • Mechanical Boilers • Mechanical Humidifiers
Pipe Material	Pipe: Carbon Steel, Schedule 40, Grade B. Use A53 below 5 PSIG and A106 Above 5 PSIG.

Phase 1 vs Phase 2 – Phase 1 & 2 shall have separate gas meter and regulators and a separate connection to the gas company.

LABORATORY COMPRESSED AIR (PHASE 2 ONLY)

Air compressor shall be factory packaged, single point connection, expandable, triplex/quadplex scroll compressor with wet and dry receiver tanks, desiccant dryer and pre-and-post filtration. Compressed air will be distributed via copper piping to lab rooms and outlets as defined by the building program. Provide pressure regulator at each laboratory module as required. All branch take-offs into each laboratory shall have isolation valves.

Provide BAS control and monitoring of the compressed air system, dryer system and source line pressure. Monitor dew point, pressure and status. Provide alarms 'Sys Alarm', 'Alarm' and 'Dryer Alarm'.

All branch take-offs into each laboratory shall have isolation valves. The central compressed air system shall be oil-free, factory packaged, have a single point connection, be expandable, and have a minimum triplex 10 HP air compressor package with dryers and receiver tank.

Laboratory Compressed Air Design Criteria	
Air Compressor Outlet Pressure	125 psi minimum
Main distribution pressure	110 psi
Pipe Material	ASTM B819 copper tube, cleaned and degreased for oxygen service and manufactured to be ISO 9001 or equivalent. Soldered Joints. Pipe size 3-1/2" and smaller: Type 'L.' Pipe size 4" and larger: Type 'K.'

LABORATORY GAS SYSTEMS (PHASE 2 ONLY)

A lab gas cylinder manifold will be provided as required by the program. Lab gas manifolds and regulators to be provided by each researcher.

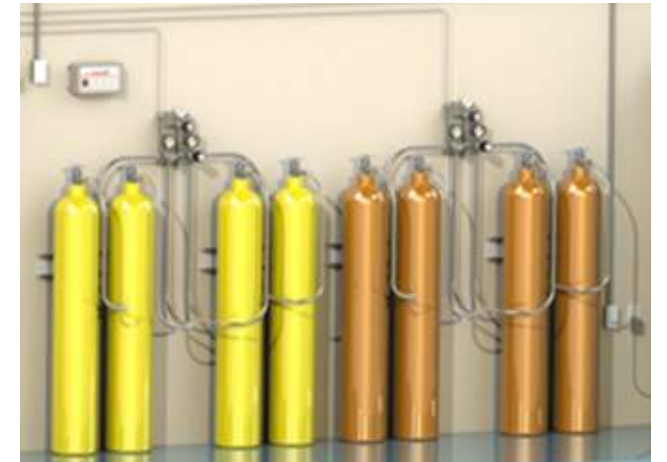
To minimize gas piping distribution, gas cylinder manifolds with automatic cylinder switchover and remote monitoring will be provided near the laboratory.

Cylinder restraints will be provided to all cylinders, including the point of use in the laboratories.

Semi-Automatic Cylinder Manifold Systems shall provide a continuous supply of high purity gas via dual regulator configuration, supplying a common line regulator yielding constant outlet pressure. The system shall include a transducer based on a remote alarm that displays numeric cylinder pressure. The assembly shall include an isolation valve, a 36-inch stainless steel-lined flexible hose with an integral check valve, and a CGA 320-cylinder connection per side with a maximum allowable pressure of 3,000 psig.

The Carbon Dioxide/Oxygen monitor shall be 0-10,000 ppm Carbon Dioxide and 0-25% Oxygen ranges; 4-20 mA output, Two user-settable relays, digital display; audible alarm, 110VAC/24 VDC power supply, and polycarbonate enclosure.

The cylinder pressure alarm shall be designed to report the status of up to two individual points of observation in automatic switchover and fail-safe gas delivery. Cylinder pressure alarms shall be designed to report the status of up to two separate points of observation in automatic switchover and fail-safe gas delivery applications.



Gas Cylinder Manifolds

If required, flammable gas such as Hydrogen shall be provided with gas cabinets that include a programmable emergency shutoff control system mounted on top of the gas cabinet. The process panel shall be complete with a two-stage regulator, multi-turn valves, stainless steel armored flexible pigtail with a CGA 350-cylinder connection, and a pneumatically actuated emergency shutoff (ESO) valve. The controller shall provide a high-profile, visible, and audible notification. It shall include a display of multicolor input and output status LED's so that triggering events are identified, and the status of all output ports is known. The controller shall provide status monitoring and integration via programmable output relays, event logs, on-board web servers, and e-mail alerts. The controller's primary function is to monitor alarm conditions and provide an electro-pneumatic link to ESO valve(s) inside the gas cabinet, thereby shutting off the gas cylinder. Typical alarm conditions include an Integral E-Stop, a Pneumatic Air pressure switch, gas detection by the onboard gas sensor, excess flow, remote E-stop, and gas detection by a standalone gas monitor by others. Another function of the system is to generate warnings for non-critical alarms via the local annunciator device.

MECHANICAL NARRATIVE

MECHANICAL DESIGN OBJECTIVE

The following describes the basic mechanical work to be performed, and materials provided. The project will utilize mechanical systems that are cost effective, energy efficient, environmentally friendly, and easily maintainable. Strategies employed will conserve energy, provide improved indoor environmental quality, ensure continued operation with an outage, and provide increased resiliency. The design should promote forward thinking in engineering and be flexible in design.

CODES AND STANDARDS COMPLIANCE

The latest version, or current adopted version, of the following codes and standards will be used as:

- 2018 International Building Code (IBC) with Amendments
- 2018 International Mechanical Code (IMC) with Amendments
- 2018 International Plumbing Code (IPC) with Amendments
- 2018 International Energy Conservation Code (IECC) with Amendments
- 2017 National Electrical Code (NEC) with Amendments
- American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standards
 - ASHRAE 62.1 – Ventilation for Acceptable Indoor Air Quality
 - ASHRAE 90.1 – Energy Standard for Buildings Except Low-Rise Residential Buildings
- American National Standards Institute (ANSI) Standards
 - 110 – Methods of Testing Performance of Laboratory Fume Hoods
 - Z9.5 – Laboratory Ventilation
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- American Society for Testing and Materials (ASTM)
- Underwriters' Laboratories (UL)
- Sheet Metal and Air-Conditioning Contractors National Association (SMACNA) Standards

ENVIRONMENTAL DESIGN CONDITIONS

Site Location | Elevation: Meridian, Idaho | 2,600 Feet Above Sea Level
Latitude | Longitude: 43.612 °North | 116.392 °West

OUTDOOR DESIGN TEMPERATURES (ASHRAE 99.6% / 0.4% DATA)

Winter Dry Bulb 6.7 °F (-16.2°F Extreme)
Summer Dry Bulb | Coincident Wet Bulb (Hot): 97.3 °F | 63.1 °F
Summer Dry Bulb | Coincident Wet Bulb (Peak Enthalpy): 86.6 °F | 67.7 °F
Humid Dry Bulb | Coincident Wet Bulb: 67.1 °F | 63.0 °F
Air-Cooled Equipment Ambient Design Temperature: 110 °F

INDOOR DESIGN TEMPERATURES AND HUMIDITY

Winter | Summer Dry Bulb | Humidity (Admin, Office): 70°F±2°F | 74°F±2°F | 55% RH Max
Winter | Summer Dry Bulb | Humidity (Laboratory): 70°F±2°F | 74°F±2°F | 55% RH Max
Winter | Summer Dry Bulb | Humidity (Instrumentation): 72°F±2°F | 72°F±2°F | 55% RH Max
Winter | Summer Dry Bulb | Humidity (Telecom): 74°F±4°F | 74°F±4°F | 55% RH Max
Winter | Summer Dry Bulb | Humidity (Vehicle Processing): 68°F±2°F | 76°F±2°F | 55% RH Max

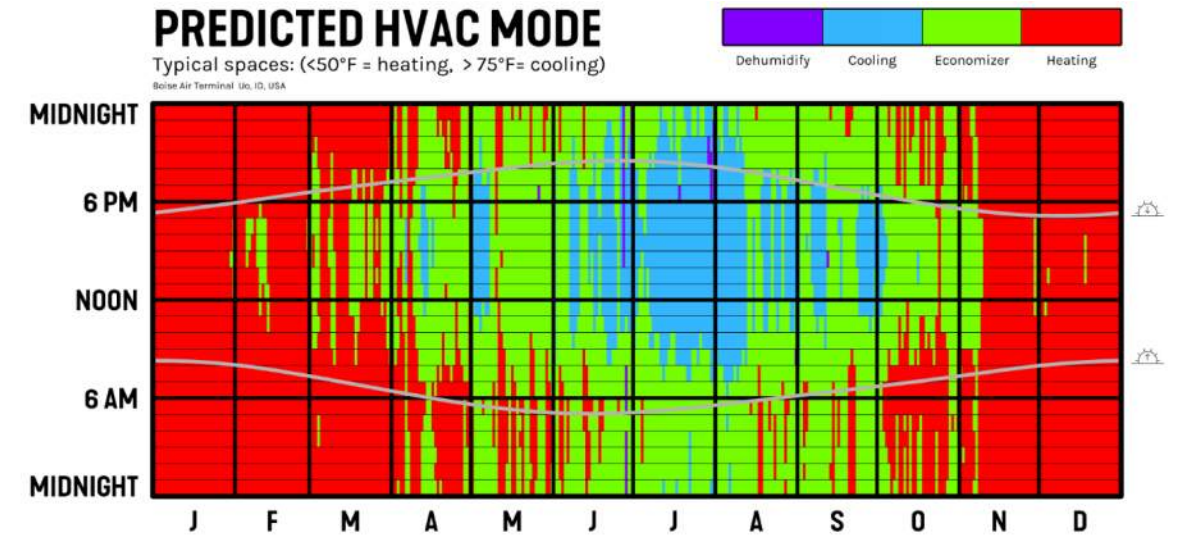
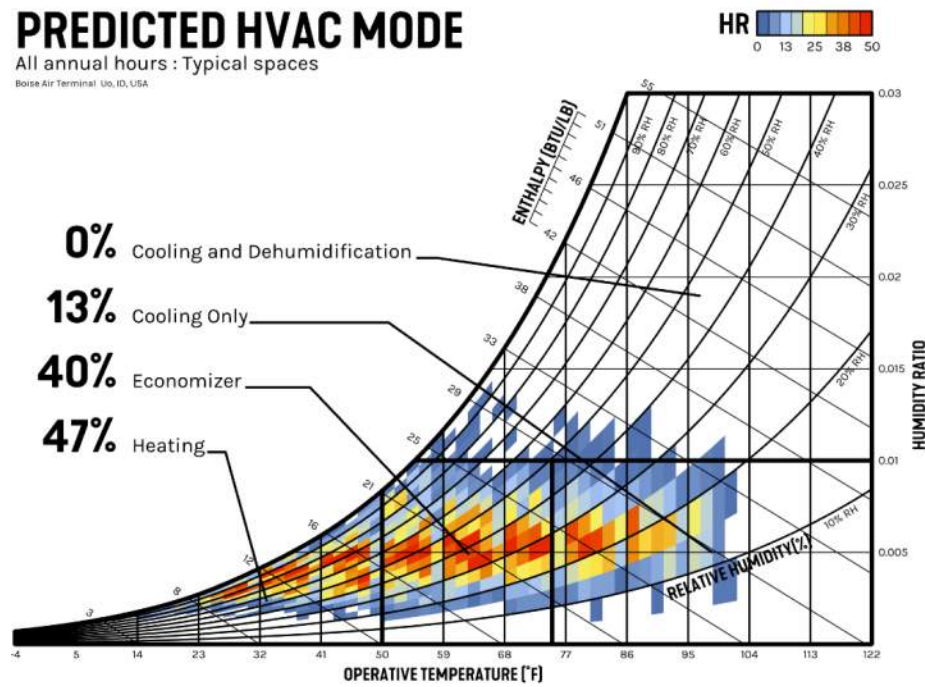
MINIMUM VENTILATION RATES

Office, Public, and Support Spaces: 2018 IMC 403.3 and ASHRAE 62.1 Ventilation Standard
Laboratory and Laboratory Support Spaces: Minimum 4 Air Changes per Hour (ACH) Unoccupied
Minimum 6 Air Changes per Hour (ACH) Occupied

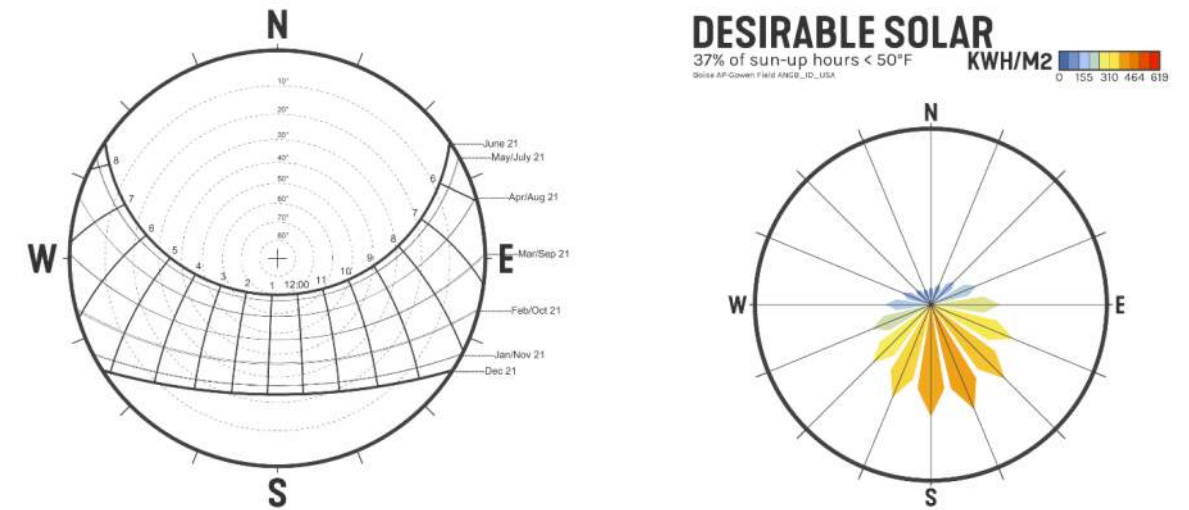
All supply air delivered to laboratory zones from the central dedicated outside air systems will be single-pass exhausted. To ensure containment within laboratory zones, laboratories are maintained at negative pressure to non-laboratory zones.

CLIMATE ANALYSIS AND SYSTEM OPERATING MODES

The site was analyzed using SmithGroup's Climate Analysis Tool and hourly weather data to inform both the local climate and potential operating modes for systems. This visual representation, from January through December over the course of the day, is then used to inform energy efficient system solutions. A representative hourly weather analysis is shown below to estimate system operating modes based on outside air conditions. Each point on the chart is a single hour out of the year. The operating modes are also shown as they occur over the course of a year in the bar chart below.



The above Predicted HVAC Mode chart highlights a heating dominated climate, with dehumidification (purple) limited to summer for virtually 0% of the year. Mechanical cooling is needed 13% of the year (combined purple and blue). Free cooling outside air economizer operation (green) is available for up to 40% of the year with outside air heating estimated at up to ~50% of the year. Given laboratories with minimum ventilation, some heating will be required year-round.

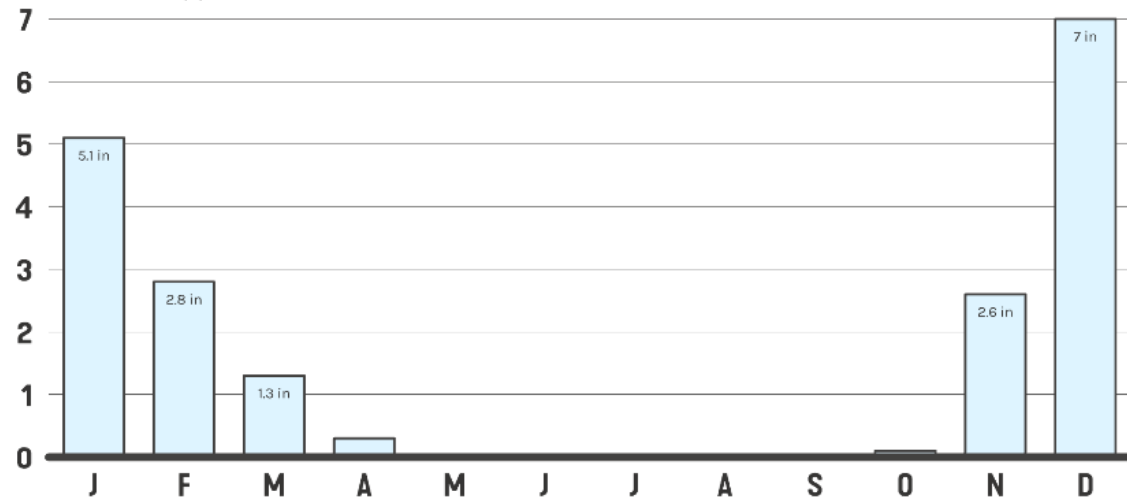


The above indicates the sun path for the building location (left image) and indicates desired solar impact in the right image.

Other climate factors may be an issue and worth considering such as wind and snowfall. The snowfall in this area is minor to moderate as the below chart indicates with a max of 7" in the month of December.

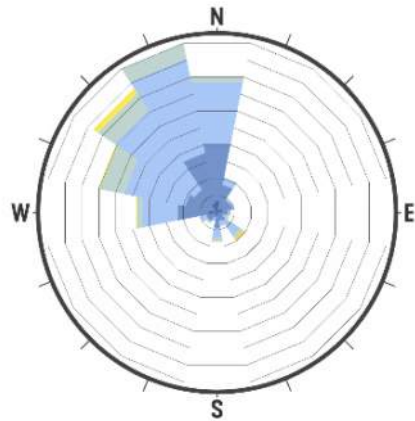
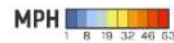
SNOWFALL

Average monthly snowfall 1981 - 2010 (in)
Boise AP-Gowen Field ANGB, ID, USA



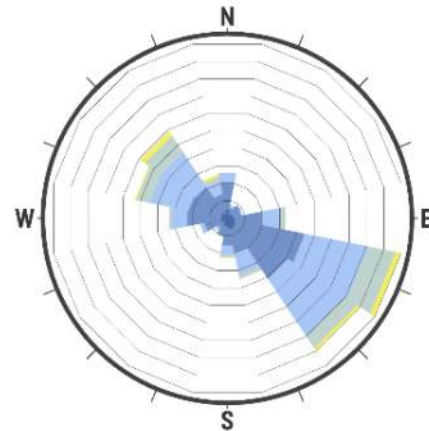
HOT WIND

12% of all hours are > 75°F
Boise AP-Gowen Field ANGB, ID, USA



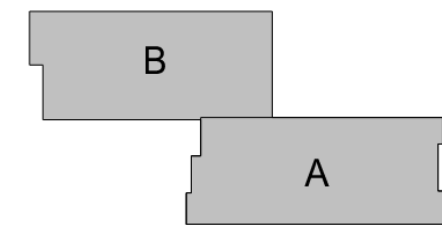
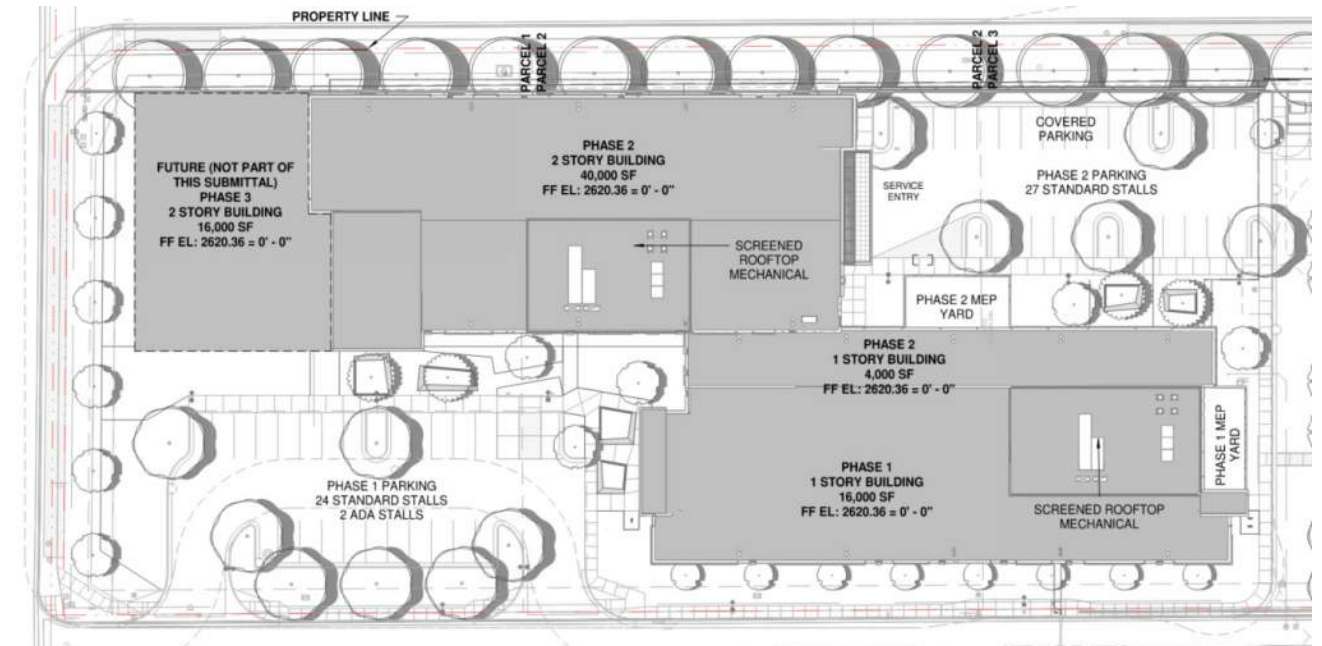
COLD WIND

44% of all hours are < 50°F
Boise AP-Gowen Field ANGB, ID, USA



MECHANICAL SYSTEM LOADS

The mechanical cooling and heating loads will be further refined as the program develops during the DD and CD phases. Two separate construction phases are being addressed as part of this submittal, phase 1 and phase 2. The overall development is divided into two sections, areas A and B. Overall system sizing for phase 1 will account for the initial building footprint being designed in area A with sufficient capacity for the phase 2 expansion to area A. Phase 2 system sizing will be determined by the area B development and shall be isolated to the two-story building, sans the phase 2 boiler locations, which will be placed in the phase 1 mechanical room.



Mechanical Systems Key Plan

The projected cooling + heating loads for the phase 1 (Phase 1 16,000 SF building + phase 2 4,000 SF expansion) are as follows (piping and ductwork adjustments would need to be made for the phase 2, area A expansion):

- **Cooling Load Assumptions:** Laboratory (50 tons), Circulation/Support/Collaboration/Private Office (34 tons) for a total building load of 84 tons.
 - **Circulation/Support/Collaboration/Private Office:** Cooling will be via Variable Refrigerant Flow system (see below).
 - **Laboratory:** Cooling will be via direct expansion cooling within the 100% outdoor air unit (see below).
- **Heating Load Assumptions:** Laboratory (925 MBH), Circulation/Support/Collaboration/Private Office (360 MBH) for a total of 1,285 MBH. Boiler sizing assumes a failure of the heat recovery water system. Boilers to be located in mechanical room. Future space shall be allocated for additional boilers to be added per phase 2 area B demands.
 - **Circulation/Support/Collaboration/Private Office:** Variable refrigerant volume heating: 360 MBH (see below).
 - **Laboratory:** Two (2) nominal 750 MBH boilers for phase 1 and phase 2 area A capacity. (see below). Full redundancy here will be achieved in phase 1 and partial for the phase 2 area A expansion.
 - **Note:** Heat recovery system shall provide additional partial redundancy upon temporary boiler failure.

The projected cooling + heating loads for phase 2 area B are as follows:

- **Cooling Load Assumptions:** Laboratory (68 tons), Circulation/Support/Collaboration/Private Office (131 tons) for a total building load of 199 tons.
 - **Circulation/Support/Collaboration/Private Office:** Cooling will be via Variable Refrigerant Flow system (see below).
 - **Laboratory:** Cooling will be via direct expansion cooling within the 100% outdoor air unit (see below).
- **Heating Load Assumptions:** Laboratory (1,250 MBH), Circulation/Support/Collaboration/Private Office (950 MBH) for a total of 2,200 MBH. Boiler sizing assumes a failure of the heat recovery water system.
 - **Circulation/Support/Collaboration/Private Office:** Variable refrigerant volume heating: 950 MBH (see below).
 - **Laboratory:** Two (2) nominal 750 MBH boilers to provide capacity for phase 2 area B. Boilers are to be placed in the allotted space provided in the phase 1 mechanical room (see below).
 - **Note:** Heat recovery system shall provide partial redundancy upon temporary boiler failure.
 - **Note:** Phase 1 and phase 2 heating water systems shall be manifolded together with bypass control valves to most effectively serve overall system demands in tandem.

BUILDING OUTSIDE AIR SYSTEM:

Minimum ventilation for laboratory spaces and administrative areas will be provided by a 100% outdoor air, energy recovery unit with DX cooling and hot water heating. The laboratory spaces will be evaluated against ASHRAE Classification of Laboratory Ventilation Design Levels (LVDL) and environmental health & safety standards. Initial planning assumes a minimum of 4 air changes per hour (ACH) with the ability to increase to 6 ACH or more based on connected laboratory equipment. Office ventilation will be based on IMC 2018 section 403.3 and ASHRAE 62.1. Positive pressurization for the office and support spaces will be maintained relative to laboratory zones.

Dedicated outside air systems (DOAS units) are planned to support laboratory, administrative, and office functions. All air supplied to laboratory zones as well as the administrative zones will be single pass supply and exhaust.

To lower fan energy, the DOAS units are designed for a face velocity of 450 FPM or less. The current laboratory program assumes that minimum humidification is not required at the DOAS unit level. DOAS units utilize a fan array configuration to limit motor sizes and reduce breakout noise. The DOAS units shall meet the following criteria:

- Phase 1: Two (2) 9,500 CFM DOAS Unit. Full redundancy is achieved for phase 1 and partial for the phase 2 area A expansion.
- Phase 2: Two (2) 18,000 CFM DOAS Unit.
- Inlet Plenum with isolation damper.
- Dual Stage MERV 8/14 Side Access Filter Section.
- Heat Recovery Section.
 - Indirect air to air energy recovery exchange via heat pipe and modular combined exhaust cabinet.
- Heating Coil Section with stainless steel IAQ drain pan.
- Cooling Coil Section with stainless steel IAQ drain pan.
- Supply Fan Array Section with multiple supply air fans complete with inlet backdraft dampers (no system effect type), piezo-ring type airflow measuring stations, and a motor removal rail. Fan sizing / VFD configuration to provide full design airflow with the loss of a single fan. Assume a minimum of (4) fans per unit, (Phase 1: 9,500 CFM, 20 HP, Phase 2: 18,000, 40 HP) each with dedicated VFD drive.
- Top Supply Air Connection with isolation damper.

All fans will have variable frequency drives for capacity control. Supply air from the 100% outdoor air unit(s) will be distributed throughout the building via medium pressure ductwork to supply air valves with reheat or to VRF terminal units. Baseline air distribution is assumed to have overhead supply air type with laminar flow diffusers at fume hoods and with programs requiring limited air velocities.

ADMINISTRATIVE AREA SYSTEM - VARIABLE REFRIGERANT VOLUME SYSTEM:

Administrative areas and areas requiring year-round or dedicated cooling, such as electrical, telecommunications, and elevators will utilize a VRF system as noted. For phase 2, garage bays will utilize local the VRF system as well. Airflow measuring stations in the outside air intakes will ensure minimum ventilation and inform exhaust levels. Switches at the roll-up doors will allow the garage to set back temperatures when the doors are open to minimize energy use.

- There will be approximately 37 total interior/exterior zones during phase 1, an additional 8 zones for the phase 2 area A expansion and 73 total interior/exterior zones for phase 2 area B.
- A combination of horizontal ducted units and ceiling mounted units will be used to deliver conditioned air to the spaces.
- Horizontal units (2 total zones Phase 1, 6 total zones Phase 2)
 - Units shall range from 1 to 10-ton, 25% outdoor air, horizontal ducted heat pump style fan coil unit(s) ranging in size from 400 to 4,000 CFM with the following components:
 - Supply fan.
 - DX coil with drain pans.
 - Filter section: MERV 8 filter.
 - DX Coil section; 55F leaving air temperature (summer) 90F leaving air temperature (winter)
 - Provide single point power connection and convenience outlet.
- 2x2 Ceiling Mounted units (35 total zones phase 1, 8 total zones phase 2 area A expansion, 67 total zones phase 2 area B)
 - 0.5-1 dual heating/cooling style units
 - 25% OA, ~150 CFM total air volume.
 - Each office will have its own dedicated ceiling mounted unit with independent thermostatic control.
 - Supply fan.
 - DX coil with drain pans.
 - DX Coil section; 55F leaving air temperature (summer) 90F leaving air temperature (winter)
 - Provide single point power connection and convenience outlet.
- Condensing units
 - Phase 1 and phase 2 area A (~34 total tons required):
 - Provide two (2) nominal ten (10) ton and two (2) nominal eight (8) ton VRF style condensing units. Units to be located on roof behind screen wall.
 - Phase 2 area B (~76 total tons required):
 - Provide four (4) twenty (20) ton, VRF style condensing units. Units to be located on roof behind screen wall.
- Branch Boxes
 - Phase 1 and phase 2 area A: Eight branch selector boxes. Each box shall have six (6) ports. Provide one additional branch selector box for the phase 2 expansion to phase 1.
 - Phase 2 area B: Ten branch selector boxes. Each box shall have six (6) ports.

LABORATORY AREA SYSTEM:

The laboratory spaces will be served by the 100% outdoor air, energy recovery system for outdoor air requirements and cooling requirements. Heating will be provided via the 100% outdoor air, energy recovery unit heating coil and reheat coils at the supply air valves. See below for the 'Laboratory Heating System' and 'Heat Recovery System'.

The laboratory areas will be served by supply air, venturi style, low pressure drop valves. Phase 1 will have 16, phase 2 area A will have an additional 6, and phase 2 area B will have 22. When phase 1 is expanded, ductwork from the Latent Prints Chem Lab, DNA Examination and Post-PCR laboratory spaces will be expanded, and the venturi valves will be sized for these capacities in phase 1. The supply valves will have hot water reheat coils associated with them. The laboratory will be a single pass-through air system, meaning all spaces will be 100% exhausted. Exhaust air will be through the energy recovery unit and then to laboratory exhaust air fans. See below for 'Laboratory Exhaust System'.

Laboratory spaces will utilize pressure-independent venturi-type supply valves with hydronic reheat with high-speed valves as required in fume hoods (and supplies in fume hood zones). A fixed airflow offset maintains space pressurization relationships. LED pressure sensors (red/green) will monitor pressures in each laboratory and provide a record of room operation. Laboratory air distribution in laboratory zones will be overhead supply air type given minimum ventilation requirements.

BUILDING HEATING SYSTEM:

The variable-primary heating water system provides for the primary heating of the new building. The system will serve dedicated outside air-handling units (DOAS) and terminal heating supply air valves.

Major equipment for the building heating system includes the following:

- Phase 1 and phase 2 area A: Two 750 MBH natural gas-fired high-efficiency condensing boilers with sealed combustion air and flue venting away from outside air intakes. Provide for a minimum 10:1 turndown. Boiler sizing and quantity provide for N+1 redundancy (for Phase 1) for essential laboratory programs.
 - Provide space in Phase 1 mechanical room for two additional 750 MBH boilers to service Phase 2 area B.
- Two 75 GPM primary pumps, 70 FT Head, 3 HP each. N+1 redundancy. Pumps shall be installed in a parallel configuration with the redundant pump set to cycle for equal run time. Pumps shall be installed with foot supports on neoprene isolation pads.
 - Space shall be allotted in Phase 1 mechanical room for two additional pumps adjacent to the anticipated boilers (same sizing criteria). Piping for future pump connections shall be provided in phase 1.
- Provide inline type pumps with a dedicated VFD, suction diffuser / strainer, pressure gauges, and discharge check valve.

- Additional accessories include high velocity coalescing dirt/air separator, bypass chemical pot feeder, and diaphragm-type expansion tank.
- The mechanical room located in Phase 1 shall be adjacent to outdoor equipment yard, providing direct access to equipment.

The supply water temperature will be reset based on outside air temperature. Note that heating is anticipated year-round in laboratory zones due to the increased minimum ventilation rates and desire for tighter temperature control.

HEAT RECOVERY SYSTEM:

The heat recovery system recovers energy from laboratory exhaust via air-to-air heat recovery to precondition outside air at the DOAS unit(s). The air handlers shall have a combined cabinet which utilizes a heat pipe that exchanges heat with the laboratory exhaust stream and the outside air upstream of all heating and cooling coils on the supply air side. Exhaust shall be drawn through the cabinet via the dedicated laboratory exhaust fans where the airstream shall be terminated after the heat exchange occurs.

LABORATORY EXHAUST SYSTEM:

The laboratory exhaust system is isolated from supply air in a separate shaft and has individual risers from laboratory control zones. These exhaust risers are then combined upstream of the exhaust side of the 100% outdoor air energy recover unit(s) located on the roof. Bypass ducting around the 100% outdoor air energy recovery unit allows individual units to be isolated for inspection and service without impacting system operation. Bypass outside air dampers at exhaust fans allow for a constant stack velocity.

The system consists of in-line laboratory exhaust fans with high-speed motorized isolation dampers, inlet backdraft dampers, and piezo-ring type airflow measuring stations. For phase 1 and phase 2 area A, three (3) 7,000 CFM fans shall be provided and for phase 2 area B, three (3) 10,000 fans shall be provided. For each phase, the fans shall be arranged as a packaged system with high velocity discharge nozzles together with dilution win bands to promote mixing and dilution of exhaust air. Nozzle sizing allows for exhaust fans to turn down 50% while maintaining a discharge velocity of 3,000 FPM.

System configuration provides N+1 redundancy for overall building exhaust demands.

Laboratory exhaust valves are pressure-independent venturi-type with high-speed valves as required in fume hood and associated supply air zones. Provide stainless steel or coated exhaust valves at all branches serving fume hoods, canopy hoods, or point exhaust sources. Provide dedicated laboratory controllers at fume hoods. Exhaust ductwork shall be stainless steel from the device to the exhaust air duct main. Fan housing shall be bifurcated, comprised of steel and spark resistant C construction.

Restrooms, locker rooms, janitor closets and overall building relief will be exhausted via the laboratory exhaust system to limit first cost and allow for improved energy efficiency from the energy recovery coils.

ENERGY MANAGEMENT AND CONTROL SYSTEM:

An electronic direct digital control system (EMCS) to monitor and control building systems will be provided. The direct digital control system will provide precise temperature control and include operational strategies to maximize the energy effectiveness and proper maintenance of the building systems. Control strategies for the air handling systems will include system start-stop, supply air static control, economy cycle, air conditioning, heating, outside air control, and maintenance routines.

Dedicated local lab controllers will be provided for individual laboratory zones and fume hoods. A central laboratory controller will consolidate the local controllers in one location and allow for integration into the EMCS. The configuration will allow for monitoring and set point adjustment. Local LED room pressure monitors will provide visual indication of negative space pressurization.

Laboratory equipment, refrigerators, and freezers will be monitored by the EMCS for alarms and provide notification of failures. Metering will also be provided to ensure optimum building performance. The items to be metered and trended include but are not limited to the following: electrical total energy use, mechanical energy use (through variable frequency drives and controllers), lighting energy use, natural gas, building water use, and irrigation water use.

A historian will provide trends for laboratory zones, equipment, and storage areas to document and provide a record of the local environment in which the evidence was tested and stored. Provide an energy dashboard to highlight energy use and provide a means to document system optimization.



Hamilton County Coroner and Crime Lab Lobby

ELECTRICAL NARRATIVE

ELECTRICAL DESIGN OBJECTIVE

The following describes the basic electrical work to be performed, and materials provided. The project will utilize electrical systems that are cost effective, energy efficient, environmentally friendly, and easily maintainable. Strategies employed will conserve energy, provide improved indoor environmental quality, ensure continued operation of essential equipment with an outage, and provide increased resiliency. The design will promote forward thinking in engineering and be flexible in design.

CODES AND STANDARDS COMPLIANCE

The latest version, or current adopted version, of the following codes and standards will be used as:

- 2018 International Building Code (IBC) with Amendments
- 2018 International Mechanical Code (IMC) with Amendments
- 2017 International Plumbing Code (IPC) with Amendments
- 2018 International Energy Conservation Code (IECC) with Amendments
- 2017 National Electrical Code (NEC) with Amendments
- Illuminating Engineering Society (IES)
- American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standards
- American National Standards Institute (ANSI) Standards
- National Fire Protection Association (NFPA) Standards
- American Society for Testing and Materials (ASTM)
- Underwriters' Laboratories (UL)

ELECTRIC UTILITY

The site is within the electric utility service area of Idaho Power. The new Crime Lab will be independently served by Idaho Power.

In concept, underground utility primary service will be extended from a medium voltage switch cabinet to a new pad mounted utility transformer. The new utility transformer will be located to the east of the new Crime Lab, close to the location of the new electric Service Entrance Section (SES). Transformer installation and meter shall be designed in compliance with all Idaho Power requirements.

The utility power to the new Crime Lab shall be coordinated with Idaho Power and all relevant trades and disciplines.

ELECTRICAL DISTRIBUTION EQUIPMENT– NORMAL POWER

The proposed new Crime Lab phase 1 will be served from a new 1600 amp 208/120v, 3 phase, four wire, NEMA-1, UL 891 SES braced for 100kAIC. SES bussing shall be copper and rated for 1600 amps. The SES will be equipped with a 1600A LSI main circuit breaker, surge protection device, LSI distribution circuit breakers and arc flash mitigation. SES capacity will accommodate initial design loads and provide additional capacity for future additions/renovations.

The SES will be located on the east side of the phase 1 building in a dedicated main electrical room, accessible from the exterior and interior of the building. Other distribution level electrical equipment such as distribution boards will also be in the main electrical room.

Branch level electrical distribution equipment will reside in the corridors of the building and be supplied by the main electrical room.

The proposed new Crime Lab Phase 2 will be served from a new 1000 amp 480/277V, 3 phase, four wire, NEMA-1, UL 891 SES braced for 100kAIC. SES bussing shall be copper and rated for 1000 amps. The SES will be equipped with a 1000A LSI main circuit breaker, surge protection device, LSI distribution circuit breakers and arc flash mitigation. SES capacity will accommodate initial design loads and provide additional capacity for future additions/renovations.

The SES will be located on the east side of the phase 2 building in a dedicated main electrical room, accessible from the exterior and interior of the building. Other distribution level electrical equipment such as distribution boards will also be in the main electrical room.

Branch level electrical distribution equipment for phase 2 will reside in the electrical rooms on the first floor and second floor.

ELECTRICAL DISTRIBUTION EQUIPMENT– GENERATOR POWER

UL 2200 stand-by generators and associated downstream distribution equipment will be provided for phase 1 and phase 2 separately. Phase 1 will have (2) 100KW generators. The generators shall each be configured with a 200 gallon subbase diesel fuel tank, and sound attenuated weather protective enclosure with vertical air discharge. Sound attenuated weather protective enclosure decibel rating shall be analyzed and selected to be within acceptable level at the Crime Lab property line, which is adjacent to existing residential structures. These generators will be in an enclosed generator yard located adjacent to the east side of the building. Phase 2 will have (2) 175KW generators. The generators shall each be configured with a 350 gallon subbase diesel fuel tank, and sound attenuated weather protective enclosure with vertical air discharge. Sound attenuated weather protective enclosure decibel rating shall be analyzed and selected to be within acceptable level at the Crime Lab property line, which is adjacent to existing residential structures. These generators will be in an enclosed generator yard located adjacent to the north side of the east building.

The generator system will be structured to serve life safety (NEC 700), legally required (NEC 701) and optional stand-by (NEC 702) distribution branches. The emergency and stand-by systems shall consist of a series of priority ranked automatic transfer switches (ATS). The ATS units shall transfer in rank of priority and in reference to legal and owner defined parameters. All phase 1 ATS units will be in the phase 1 emergency electrical room located adjacent to the phase 1 main electrical room and all phase 2 ATS units will be in the phase 2 emergency electrical room located adjacent to the phase 2 main electrical room.

For phase 1 branch level generator distribution equipment will reside in the corridors of the building and be supplied by the phase 1 emergency electrical room.

For phase 2 branch level generator distribution equipment will reside in the electrical rooms of the building and be supplied by the phase 2 emergency electrical room.

ELECTRICAL METERING

Electrical metering shall be provided for each phase of the building. The main switchboard will have a meter for the main. The meters shall be interconnected and interface with the building management system. Idaho utility meter shall be included as part of the interconnected system.

UNINTERRUPTIBLE POWER SUPPLY

Uninterruptible power supply (UPS) serving information technology equipment is requested to be localized rack mounted systems. UPS run time shall be ~15 minutes.

Lab equipment requiring UPS backup shall be provided via local point of use units as required.

BASIC BRANCH LEVEL ELECTRICAL MATERIALS AND EQUIPMENT

Raceway systems shall consist of metal boxes interconnected with electrical metallic tubing (EMT). Poly-vinyl chloride (PVC) 40 shall be used for underground installations. Rigid galvanized steel (RGS) conduit or intermediate metal conduit (IMC) shall be used for exposed exterior work where subject to damage. The minimum conduit size for power wiring shall be 3/4-inch. The minimum conduit size for communication raceways shall be 1-inch.

Branch circuit conductors shall be copper. Conductors for power circuits shall be a minimum size of #12. Insulation shall be THWN or XHHW rated for 90 degree C; however, conductors serving loads less than 100 amps shall be sized based on 60 degree C ratings, loads 100 amps or greater shall be sized based on 75 degree C ratings. Four-wire feeders, where neutral is considered a current-carrying conductor, shall have an additional 80% de-rating. All conductors, including neutrals and grounding conductors, shall be color-coded. Multi-circuit homeruns shall include dedicated neutral conductors. Homeruns shall be configured with three circuits maximum.

Metal Clad Cabling (MC) will be utilized for final connections to devices only, circuit homeruns will be comprised of EMT and conductors.

Wiring devices shall be commercial grade, apart from lab areas where hospital grade is required, rated 20-amp minimum in all areas. Wiring device plates shall be white when fed from the normal power distribution system, red when fed from the generator power distribution system. Device plates shall be nylon and equipped with a permanent, high-quality machine generated label reflecting electrical source and circuit information.

Distribution panels and panel boards shall be equipped with bolt-on, molded-case branch circuit breakers. Insulated case circuit breakers may be required for panel mains due to selective coordination. Each panel shall have a hinged door with a master-keyed flush tumbler latch. Selected panels shall also have hinged trim to allow the entire front cover to swing open for easy maintenance. All switchboards/switchgear and branch circuit panels shall be equipped with copper bussing.

Spaces within the building shall be populated with electrical devices dependent on function, equipment requirements, code compliance, and best practice standards. Laboratory areas shall be equipped with aluminum dual channel surface mounted raceway with 5-20R receptacles 24" on center. Special receptacles shall be provided as required per equipment specifications.

All disconnect switches shall be heavy-duty type and the enclosure shall be rated in accordance with the installation location. Disconnect switches serving motors, HVAC equipment and certain laboratory equipment shall be used.

HVAC equipment shall be controlled by VFD's as determined by Division 23.

Component type SPD's will be provided at selected distribution and panelboards.

The electrical distribution systems shall be fully rated.

The electrical equipment manufacturer shall provide a selective coordination study and arch flash calculations.

GROUNDING

The grounding system shall be installed in strict accordance with NEC article 250.

An insulated ground conductor shall run back to the supply equipment in same raceway as the phase conductors.

An insulated equipment grounding conductor shall be installed with feeders and branch circuits. Metal raceways, boxes, equipment, receptacles, light fixtures, cable tray, and IT racks shall be bonded to the equipment grounding system. Ground bars are to be located in the electrical room and MDF.



Travis County Medical Examiner Staff Terrace

LIGHTNING PROTECTION

The function and contents of the building justify the implementation of a lightning protection system and shall be provided unless directed otherwise by owner. The lightning protection system shall comply with all aspects of LPI code 175 and shall be installed under the supervision of an LPI certified master installer. The completed system shall bear UL Master Label C, to be secured by installer per UL96A.

LIGHTING

Parking areas shall be equipped with LED light fixtures. Parking area and other exterior lighting shall be controlled via a lighting control panel with integral astronomical timeclock and full programming capabilities. This lighting control panel shall also be utilized to serve signage.

The facility shall be populated with LED light fixtures considering occupant needs, visual tasks to be performed, the desired appearances of the respective spaces and energy constraints. The lighting design shall consider the recommended practices of the IES, energy codes and the desired range or lighting levels per programmed space.

Dual Technology occupancy sensors shall be used in areas where occupancy or vacancy sensing based lighting control is appropriate for the intended room function such as when occupants are relatively still.

Daylight harvesting controls shall be specified where required by code.

Lighting in public corridors, back-of-house corridors, areas of the facility that function during defined operational hours and other areas conducive to automated control shall utilize a digital lighting control system for reduction in light levels and energy consumption when appropriate. This system shall consist of automatic time-based scheduling with temporary override ability granted to select personnel. The lighting control system shall have the ability to be accessed and controlled through the building management system terminal location and from remote locations via intranet.

ENERGY MODELING NARRATIVE

INTRODUCTION

The Idaho State Police Forensic Services is planned to be a new, two-story, 58,949 SF laboratory and office facility located in Meridian, Idaho. This document is provided in support of its compliance with IECC 2018.

METHODOLOGY

To evaluate the total energy performance of the actual design and whether it meets the requirement of IECC 2018, the hourly simulation baseline building model and proposed building model are built by IES Virtual Environment software, version VE2023 computer software. The following systems and loads are included in the simulation: heating systems, cooling systems, service water heating, fan systems, lighting power, receptacle loads, and process loads.

The Baseline building was developed with the same architecture and zoning, receptacle power, occupancy, schedule of the actual design, but comply with the IECC 2018 standard reference design envelope, mechanical system.

The building energy cost is required to be equal to or less than 85 percent of the standard reference design building.

LOCAL CLIMATE

The climate of the Boise area is hot and humid in the summer, cold in winter. The ASHRAE 1% design conditions were used in the evaluation of this project, and are as shown below,

OUTDOOR DESIGN TEMPERATURES (ASHRAE 99.6% / 0.4% DATA)

Winter Dry Bulb	6.7 °F (-16.2 °F Extreme)
Summer Dry Bulb Coincident Wet Bulb (Hot):	97.3 °F 63.1 °F
Summer Dry Bulb Coincident Wet Bulb (Peak Enthalpy):	86.6 °F 67.7 °F
Humid Dry Bulb Coincident Wet Bulb:	67.1 °F 63.0 °F
Air-Cooled Equipment Ambient Design Temperature:	110 °F

BUILDING ZONING

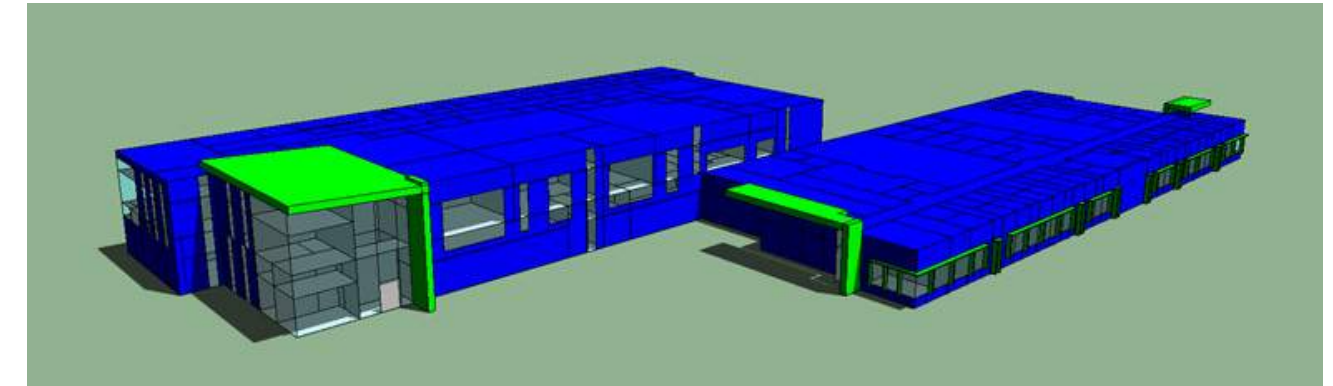


Figure 1 - Building Block in IESVE Model



Figure 2 - First Floor Zoning

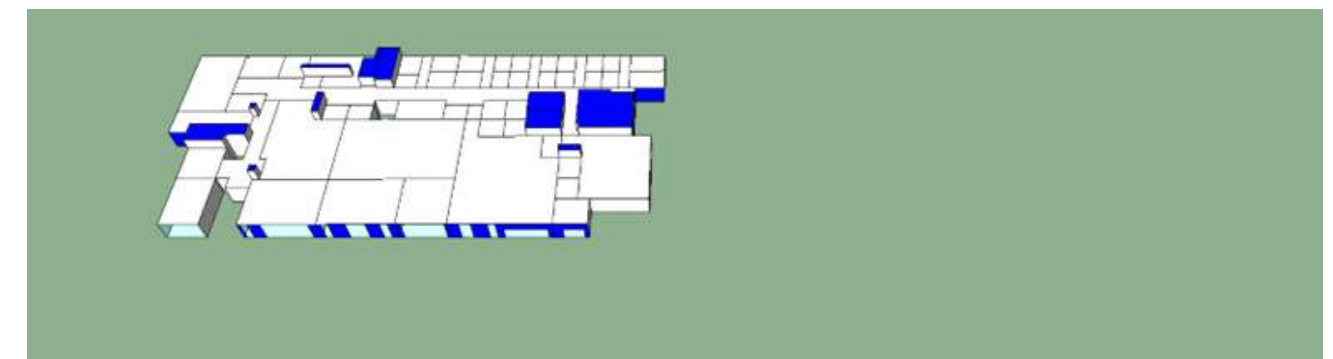


Figure 3 - First Floor Zoning

ENVELOPE

The IECC C402.1.2 Thermal envelope assembly requirement for CZ5 is applied for the Baseline model. The construction parameter comparison is shown below.

	Orientation	Above-grade wall area (ft ²)	Vertical glazing area (ft ²)	Vertical glazing area (%)
Baseline	North	10011	4081	40.8
	East	4712	790	16.8
	South	10011	3463	34.6
	West	4712	1582	33.6
	SUM	29446	9916	33.7
Proposed	North	10011	4081	40.8
	East	4712	790	16.8
	South	10011	3463	34.6
	West	4712	1582	33.6
	SUM	29446	9916	33.7

	Baseline		Proposed	
	U-value Btu/hft2F	R-value hft2F/Btu	U-value Btu/hft2F	R-value hft2F/Btu
Ground/Exposed Floor	0.033	30	0.0383	25
G Internal Ceiling/Floor	0.19	5	0.19	4
Roof	0.039	25	0.033	30
External Wall	0.064	13+7.5c.i.	0.046	21.7
External Window	0.38	SEW Facade SHGC: 0.38	0.296	SHGC: 0.39
		N Facade SHGC: 0.51		
External shading	None		As design	

		Baseline	Proposed
Roof	Solar absorptance	0.7	0.7
	Emittance	0.9	0.9
Wall	Solar absorptance	0.7	0.7
	Emittance	0.9	0.9

OPERATIONAL HOURS

The operation setting for Baseline and Proposed model are same.

The facility will be occupied 8am-6pm Monday to Friday; 9am-5pm Saturday; and 10am-4pm Sunday.

INDOOR DESIGN TEMPERATURES AND HUMIDITY

Winter Summer Dry Bulb Humidity (Admin, Office):	70°F+2°F 74°F+2°F 55% RH Max
Winter Summer Dry Bulb Humidity (Laboratory):	70°F+2°F 74°F+2°F 55% RH Max
Winter Summer Dry Bulb Humidity (Instrumentation):	72°F+2°F 72°F+2°F 55% RH Max
Winter Summer Dry Bulb Humidity (Telecom):	74°F+4°F 74°F+4°F 55% RH Max
Winter Summer Dry Bulb Humidity (Vehicle Processing):	68°F+2°F 76°F+2°F 55% RH Max

MINIMUM VENTILATION RATES

Office, Public, and Support Spaces: As Determined per ASHRAE 62.1 Ventilation Standard

Laboratory and Laboratory Support Spaces: Minimum 4 Air Changes per Hour (ACH) Unoccupied;
Minimum 6 Air Changes per Hour (ACH) Occupied

INTERNAL HEAT GAIN

The building electrical power of receptacle and lighting is simulated as table shown below:

		Baseline	Proposed
Internal Gains	Lighting (W/sf)	0.9	0.857
	Receptacle (W/sf)	1.5	1.5
	Occupancy (ft2/person)	200	200

MECHANICAL SYSTEM

The main mechanical system type for Baseline model is system 4 in Table C407.5.1(3): Packaged variable air volume with hot water reheat system, in which the heating source is gas boiler, and the cooling coil is Direct Expansion. The secondary mechanical system in baseline model needs to be modelled identically as proposed model, which is Variable Refrigerant Volume System with Connection to DOAS unit.

The mechanical system type for proposed model: Dedicated outside air systems (DOAS units) are planned to support laboratory, administrative, and office functions, it is equipped with direct expansion cooling coil and heating water coil. All air supplied to laboratory zones as well as the administrative zones will be single pass supply and exhaust. LAB spaces will be served by single duct VAV with heating water coil. Administrative areas and areas requiring year-round or dedicated cooling, such as electrical, telecommunications, and elevators will utilize a VRF. The air-to-air heat exchanger energy recovery is applied with 60% sensible heat effectiveness for DOAS units. The heating water will be provided by the two gas boilers.

The detailed information of the mechanical system is shown below.

		Baseline	Proposed
Mechanical Ventilation	Occupant Density (Person/1000ft ²)	5	5
	People outdoor airflow rate in breathing zone, Rp cfm/person	5	5
	Area outdoor airflow rate in breathing zone, Pa cfm/ft ²	0.06	0.06
Heating	Fuel Type 1	Hot Water Gas Boiler	Hot Water Gas Boiler
	Capacity (kBtu/h)	750*2	750*2
	Efficiency (%)	80	96
	Fuel Type 2	VRF	VRF
	COP	3.5	3.83
Cooling	Cooling Type	Direct Expansion	VRF
	COP	3.79	3.42

ANALYSIS RESULTS

Results of the analysis are summarized in Table shown below. The proposed building design energy cost reduction can reach up to 21.8%. So, the proposed building design meets the IECC requirement of 85% of the standard reference design building. In addition, the requirements of Section C407, C402.4, C403.2, C404, C405.2, C405.3, C405.4, C405.6 and C405.7 have been met.

In summary, based on these savings, per IECC 2018 Section 401.2 option 3, this building is proved to be complying with IECC 2018.

Energy Usage	Interior Lighting (MBtu)	Receptacle Equipment (MBtu)	Space Heating (MBtu)	Space Cooling (MBtu)	Heat Rejection (MBtu)	Interior Central Fans (MBtu)	Exhaust Fans (MBtu)	Pumps (MBtu)
Baseline	622.9	407.8	3690.2	423.2	26.9	472.1	146.4	3.7
Proposed	587.9	407.8	1504.8	523.2	33.2	494.1	223.2	1.131

Electric Demand Charge							
Baseline	Demand (KW)	Rate(\$/KW)	Charge (\$)	Proposed	Demand (KW)	Rate(\$/KW)	Charge (\$)
Jan	145	4.37	546.25	Jan	195	4.37	764.75
Feb	122	4.37	445.74	Feb	168	4.37	646.76
Mar	122	4.37	445.74	Mar	163	4.37	624.91
Apr	142	5.95	725.90	Apr	160	5.95	833.00
May	182	5.95	963.90	May	184	5.95	975.80
Jun	195	5.95	1041.25	Jun	191	5.95	1017.45
Jul	213	5.95	1148.35	Jul	213	5.95	1148.35
Aug	217	5.95	1172.15	Aug	218	5.95	1178.10
Sep	179	5.95	946.05	Sep	181	5.95	957.95
Oct	149	4.37	563.73	Oct	169	4.37	651.13
Nov	135	4.37	502.55	Nov	167	4.37	642.39
Dec	144	4.37	541.88	Dec	188	4.37	734.16
Sum			9043.49	Sum			10174.75

Electric Usage Charge									
Baseline	Electricity (MWh)	Rate-First 2000 KWH (\$/KWH)	Rate-Over 2000 KWH (\$/KWH)	Charge (\$)	Proposed	Electricity (MWh)	Rate-First 2000 KWH (\$/KWH)	Rate-Over 2000 KWH (\$/KWH)	Charge (\$)
Jan	66.24	0.093085	0.043423	2975.62	Jan	73.90	0.093085	0.043423	3308.42
Feb	55.34	0.093085	0.043423	2502.46	Feb	59.74	0.093085	0.043423	2693.29
Mar	58.83	0.093085	0.043423	2653.70	Mar	63.27	0.093085	0.043423	2846.50
Apr	56.36	0.0103409	0.047864	2622.47	Apr	59.27	0.0103409	0.047864	2761.77
May	59.02	0.0103409	0.047864	2749.81	May	61.54	0.0103409	0.047864	2870.53
Jun	61.87	0.0103409	0.047864	2886.17	Jun	64.00	0.0103409	0.047864	2988.42
Jul	76.51	0.0103409	0.047864	3587.15	Jul	72.47	0.0103409	0.047864	3393.48
Aug	69.05	0.0103409	0.047864	3230.01	Aug	68.61	0.0103409	0.047864	3209.00
Sep	58.86	0.0103409	0.047864	2742.25	Sep	62.37	0.0103409	0.047864	2910.06
Oct	56.87	0.093085	0.043423	2568.99	Oct	60.69	0.093085	0.043423	2734.64
Nov	58.27	0.093085	0.043423	2629.64	Nov	62.25	0.093085	0.043423	2802.53
Dec	67.98	0.093085	0.043423	3051.39	Dec	75.56	0.093085	0.043423	3380.24
Sum	745.20			34199.65	Sum	783.66			35898.88

Design Option	Total Cost Saving							Cost Saving (%)
	Gas		Electricity			Total		
	(MBtu)	(\$)	(MBtu)	kWH	(\$)	(MBtu)	(\$)	
Baseline	3,250	\$27,624.04	2,543	745,382	\$43,243.14	5,793	\$70,867.18	
Proposed	1,101	\$9,356.57	2,675	783,849	\$46,073.63	3,775	\$55,430.20	21.8%

Electricity and natural gas prices used for the energy cost calculation are shown below:

	Summer	Winter
Demand Charge per KW (over 20 KW)	\$5.95	\$4.37
Block 1 - First 2,000 KWH	\$0.1034	\$0.0931
Block 2 - Over 2,000 KWH	\$0.0478	\$0.0434

Figure 4 - Electric Utility Prices

Utility Price	Gas
/therm	\$ 0.8500



Ada County Coroner Staff Entry

ICT – AV/IT/SECURITY NARRATIVE

INFORMATION AND COMMUNICATION TECHNOLOGY

The SmithGroup Information and Communications Technology Team will work in conjunction with The Idaho State Police (ISP) and Idaho Office of Information Technology Services (Idaho ITS) throughout the project's design to review and confirm the ICT requirements for the project. The below represents our current understanding based on our conversations to date.

TELECOMMUNICATION SYSTEMS

- The entrance facility will be designed and installed per the requirements of ANSI/EIA/TIA-568 and 569. Services will enter the facility through the site demarcation point and will transition to the Main Distribution (MDF) room in Phase 1. Pathways will be designed and coordinated to connect the new facility to the existing server room on campus. Currently there is not a requirement for a redundant pathway connection. A minimum of 24-strands of single-mode fiber will be used to provide connectivity from the existing server room to the MDF at the new facility. Final fiber strand count to be determined with Idaho ITS and ISP.
- The communications system will consist of one Main Distribution Frame (MDF) room on the ground floor for Phase One with two Intermediate Distribution Frames (IDF) rooms in Phase Two. The MDF will be connected to the IDF rooms via fiber. MDF and IDF rooms will be stacked to the extent possible and will be connected vertically through conduit sleeves and IDF rooms and MDF rooms will connect horizontally through 4" conduit (minimum 4) and/or cable tray.
 - MDF rooms will house backbone fiber, WAN, Routers, Border switches, distribution switches, Firewalls and servers. IDF rooms will be provided on each floor to house telecommunications equipment, racks and wiring.
 - IDF rooms will house fiber drops, patch drops, distribution switches, and access switches (edge switches).
 - Phase Two Server Room will house ISP digital forensics servers dedicated to Digital Forensics; it will be isolated from ISP public network.
- Rooms will be located so that horizontal cabling will not exceed 295 feet (90 meters) from the room to a telecommunications outlet.
- Telecommunications rooms will be provided with air conditioning to maintain the room environment at 68°-77° F with 40-50% humidity.
- MDF/IDF equipment racks will be on generator power with battery systems. Final power and receptacle requirements for the telecommunications racks to be determined based on the Owner's equipment specifications.
- Rooms will be provided with fire-rated plywood backboards on all walls. Space will be provided for an electrical panel(s) that is for use for only those devices that are dedicated to telecommunications

equipment. Entry door will be 36" wide and swing outward with card reader access.

- A complete raceway system for telecommunications cabling will be provided. The raceway system will consist of cable tray, conduit, back boxes, pull wires, and accessories as required.
- Cable trays will be provided in corridors on each floor to connect each of the communication rooms for voice and data cable distribution. The tray will be located above accessible ceilings within corridors. Conduits will be provided in lieu of cable tray where corridors have gypsum board (non-accessible) ceilings.
- Typical wall mounted voice/data outlet boxes will consist of an empty double gang 4-11/16" square back box with a single gang plaster ring. A minimum of one 1" conduit will be routed from each outlet box to the cable tray system, with the conduit fastened over the top of the cable tray side rail terminated with an insulating bushing. A larger conduit may be required, dependent upon cable quantity, as determined during design phase. The conduit will be mechanically grounded to the cable tray system.
- Category 6 cabling will be the horizontal cabling basis of design for Schematic Design and cost estimating purposes.

ELECTRONIC SAFETY AND SECURITY SYSTEMS

- The building electronic security systems will be compatible with existing Idaho State Police campus standards. It is noted that Avigilon is the current standard for video surveillance cameras and monitoring. The below represents space types that will require electronic security devices. A page-turn review will be completed with the Owner during the DD and CD phases to confirm all control points, video surveillance coverage, and other security devices as required.
- Access control and Intrusion Detection
 - Entry Points.
 - Doors to Server Rooms, MDF/IDF, Server Room, Evidence Room.
 - Interior entrances to lab areas from public areas.
 - Glass break detection at outside windows.
- Video Surveillance
 - Entry Points
 - Exterior Coverage.
 - Interior hallways.

AUDIOVISUAL SYSTEMS

- The audiovisual systems will follow Idaho state audiovisual and conferencing standards as applicable for the space types in the facility.
- The audiovisual systems are planned to support presentation, collaboration, and web conference utilizing high quality audio and integrated video capabilities. The spaces will be intuitive and easy to operate allowing all users a consistent experience.
- The audiovisual systems will require specific infrastructure to support the equipment. This will include floor, wall and ceiling boxes. Examples of box types that may be utilized include:
 - Standard gang junction boxes and/or NEMA boxes.
 - Legrand Evolution series multi-service wall-mounted boxes, in-floor poke-thru's and/or floor boxes.
- Rigid conduit pathway to/from the floor and wall boxes will be incorporated into the design. In most applications, conduit will be stubbed above the ceiling surface rather than having point to point runs between box locations. Conduit will be sized to meet the cabling requirements for each location.
- Dedicated power to support the audiovisual systems will be noted on the technology plans, for reference only, as the relative location of power to the audiovisual equipment is critical in providing fully functional systems. All power will be circuited within the electrical drawings. Power requirements for audiovisual systems are planned to be at a minimum 20A / 120V. Higher voltage power, such as 208, 240 or higher is not planned for the audiovisual systems.
- In-wall blocking will be provided in select locations to support the weight of the audiovisual equipment.

- The audiovisual systems infrastructure design is planned to support any audiovisual enabled space type within the building. The following space types have been specifically identified at this time. As the design progresses this list of space types may change.
 - Phase 1
 - Conference Room
 - Breakroom
 - Circulation Area Digital Signage
 - Phase 2
 - Divisible Training Room
 - Medium Conference Room
 - Small Conference Room
 - Break Out Room
 - Training Room
 - Court Testimony
 - Circulation Area Digital Signage
 - Breakroom

CODE ANALYSIS NARRATIVE

The new Idaho State Police Forensic Services Facility will be located on approximately 3.5 acres, located on the southwest corner of South Stratford Drive and East Watertower Street in Meridian, Idaho 83642.

The proposed ISP Lab building will be built in three separate phases. Phase 1 will be a single-story building of 16,000 sf. Phase 2 is proposed as a 4,000 sf single-story addition and two-story addition of 40,000 sf. And Phase 3 will be an additional two-story addition of 36,000 sf. The building will contain laboratories, evidence processing, offices, storage and support spaces.

CODE COMPLIANCE STRATEGY

The City of Meridian maintains a Zoning Ordinance for construction of facilities within the City boundary. The 3.5 acre site is currently four separate parcels, all of which are designated C-G, or General Commercial. Prior to construction, a lot line reduction will be required to build the new lab facility. This is anticipated to require a 6-week process.

Within the Meridian Zoning Ordinance, the Public or Quasi-Public use appears to be the closest match for this Idaho State Police lab facility. This is a Permitted use within the CG zoning districts. As such, it is not anticipated that a Conditional Use (CU) application will be necessary.

The State of Idaho's adoption of updated codes last occurred at the end of calendar year 2020. Based upon a four-year renewal cycle, it is possible new codes will be adopted before the Phase 1 construction documents are submitted for permit review. The schedule of newly adopted codes will be monitored as the building design progresses into Design Development. The current codes enforced are as enumerated in the Applicable Codes section.

The ISP Lab project will be comprised of laboratories with laboratory support spaces, offices with office support spaces, shared interaction spaces, and general building support spaces. The building at full buildout will be approximately 72,000 square feet (SF), two story facility with ground-mounted mechanical equipment in a screened yard. The second level will be approximately 18'-0" above the first level, and the second level and roof will each be approximately 16'-0" above the level below.

The building will be protected with a NFPA 13 automatic fire extinguishing system, and code requirements are based on the assumption of a fully sprinklered building. The Fire Department access will conform to International Fire Code, and as amended by the City of Meridian Fire Department. Fire apparatus access will be provided to all portions of the facility and all portions of the exterior walls of the first story of the building within 150 feet.

This building will be mixed-use, non-separated with main occupancies of Business (B) and Storage (S-1). Assembly rooms with a size less than 750 SF or less than 50 occupants will be considered as Business occupancy. The total of any accessory area of any floor level is to be a maximum of 10% of the overall floor area. The allowable building area and height are based upon the most restrictive occupancy for a Type IIB construction sprinklered building. Exterior wall fire-resistive rated construction will be non-rated based on separation to adjacent property lines.

Accessibility requirements are based on the 2018 International Building Code (IBC) which references the ICC A117.1-2017.

APPLICABLE CODES

The construction will comply with all applicable Local, State and Federal regulations and ordinances, and applicable utility company requirements as approved and administered by Authorities Having Jurisdiction (AHJ) at the project location at the time of construction. Where there is a conflict between the various codes and regulation references, DOPL will make a determination in consultation with the design consultant.

AUTHORITY HAVING JURISDICTION:

The State of Idaho, Division of Occupational and Professional Licenses (DOPL) will be the Authority Having Jurisdiction (AHJ).

BUILDING CODES

- International Building Code, 2018 Edition
- International Fire Code, 2018 Edition
- International Energy Conservation Code, 2018 Edition
- International Mechanical Code, 2018 Edition
- National Electrical Code, 2017 Edition
- Idaho State Plumbing Code, 2017 Edition
- International Fuel Gas Code, 2018 Edition
- State Fire Marshal – Department of Insurance

OCCUPANCY CLASSIFICATION

Per IBC Chapter 3, the project will include the following occupancy classifications:

- 304 - Group B (Business), Offices, Laboratories: testing and research, will be the Primary building classification.
 - A space used for assembly purposes that is less than 750 square feet, or less than 50 occupants will be accessory to the primary occupancy and can be classified as a Group B occupancy.
- 311 - Group S-1 (Storage, moderate hazard), materials storage.
- 303 - Group A-3 (Assembly), less than 10% of the floor areas and shall be considered accessory to the primary occupancy.

CONSTRUCTION

Based on building of approximately 61,000 square feet (SF) and two story's, preliminary assessment of risk, fire safety levels, occupancy classification and allowable building height and area limitations, the minimum construction type per tables 504.3, 504.4 and 506.2 will be :

OCCUPANCY	ALLOWABLE AREA	ALLOWABLE STORIES	ALLOWABLE HEIGHT (FT)	MINIMUM CONSTRUCTION TYPE	TOTAL ALLOWED BUILDING AREA ALL FLOORS
B	69,000	4	75	IIB	138,000
S-1	52,500	4	75	IIB	105,000

Note: Building height and area limitations identified include the allowed areas for a sprinkler building but not the area increase due to frontage. Total Allowed Building Area is estimated based on a two-story building.

Type II-B construction - Type II-B allows the building to be non-separated, without fire barriers, when the building is analyzed based on the most restrictive occupancy type (S-1) and the height and area limitations are applied to the entire building. For verification of the S-1 allowable areas size, frontage increases will apply; the maximum allowed will be applicable for a total increase of 75% or an area of 91,875 SF.

Actual Area

- Level 1 - 41,230 gsf
- Level 2 - 20,070 gsf
- Total Building Area (Phases 1 & 2) = 61,300 gsf

Table 601 - Minimum Fire Resistance Ratings - Type II-B Construction for B and S-1 Occupancy Types.

Type II-B	
Primary Structural frame	0-hour
Bearing Walls:	
Exterior	0-hour
Interior	0-hour
Non-bearing - Exterior per Table 602 Fire Separation Distance	
< 5 feet	2-hour
5 feet < 10 feet	1-hour
10 feet < 30 feet	0-hour
> 30 feet	Non-rated at distances greater than 30 feet.
Non-bearing - Interior	0-hour
Floor	0-hour
Roof	0-hour

FIRE RESISTIVE SEPARATIONS

508.3 - Nonseparated Occupancies are occupancies individually classified and the occupancies within the same building do not need to be separated by fire resistive rating if the building complies throughout with the most restrictive occupancy classification and applicable provisions. Allowable area and height increases are based on the most resistive occupancy group under consideration for the type of construction.

707 - Fire Barriers will be used to separate exits, incidental use areas, and shafts.

Incidental use areas to the main occupancy will be separated from the main occupancy per Table 509.

Room or Area	Separation and/or Protection
Furnace room where any piece of equipment is over 400,000 btu	1 hour or provide automatic sprinkler system
Boilers over 15 PSI and 10hp	1 hour or provide automatic sprinkler system
Laundry rooms over 100 square feet	1 hour or provide automatic sprinkler system
Waste and linen collection rooms over 100 square feet	1 hour or provide automatic sprinkler system

713.4 - Shaft enclosures including exit stairs and elevators will be 1-hour where connecting less than four stories.

3007 and 3008, Fire Service access elevators and Occupant Evacuation elevators are to be enclosed with a smoke barrier having a fire-resistance rating of 1 hour, except at the level of discharge.

Corridor Fire-Resistance Rating per Table 1020.1 with sprinkler system.

Group B and S, occupancy greater than 30 per corridor: Non-rated per table 1020.1

Exit Passageways - 1024- Enclosures will have walls, floors and ceilings of not less than a 1-hour fire-resistance rating, or not less than that required for any connecting interior exit stairway.

Elevator machine rooms - 3006.4 - fire rating not less than the required rating of the hoistway enclosure.

OPENING PROTECTION

Summary of Opening Protection Requirements Based on IBC Tables 716.1

Type of Assembly		Minimum Door Rating (Hours)	Door Vision Panel Fire Rated Glazing Marking	Sidelight/ Transom Panel Fire-Rated Glazing Marking
Fire Barrier greater than 1-hour	2	1-1/2	<=100 sq. in. D-H-90 >100 sq. in. D-H-W-90	W-120
Shafts, exit enclosures, exit passageway walls	2	1-1/2	<=100 sq. in. D-H-90 >100 sq. in. D-H-T-90 or D-H-T-W-90	W-120
Fire Barriers which serve as: Shafts, exit enclosures, exit passageways	1	1	<=100 sq. in. D-H-60 >100 sq. in. D-H-T-60 or D-H-T-W-60	W-60
Other Fire Barriers	1	3/4	Maximum Size Tested D-H-NT-45	D-H-NT-45

Table 716.3 - Marking Fire-Rated Glazing Assemblies

FIRE TEST STANDARD	MARKING	DEFINITION OF MARKING
ASTM E 119 OR UL263	W	Meets wall assembly criteria.
NFPA 257 OR UL 9	OH	Meets fire window assembly criteria including the hose stream test.
NFPA 252 OR UL 10B OR UL 10C	D	Meets fire door assembly
	H	Meets fire door assembly "hose Stream Test"
	T	Meets 450 degree F temperature rise criteria for 30 minutes
	XXX	The time in minutes of the fire resistance or fire protection rating of the glazing assembly.

Exterior Wall Openings - The building will be protected throughout by an automatic sprinkler system; therefore the allowable area for unprotected openings per Table 705.8. Exterior walls which are greater than 20 feet from the property line are permitted to have unlimited unprotected openings.

Allowable Exterior Openings - Unprotected, Sprinklered (UP,S) (Table 705.8)

Fire Separation Distance	Percentage of Allowable Openings Per Unprotected, Sprinklered Opening Protection
0-3 ft.	Not Permitted
3-5 ft.	15%
5-10 ft.	25%
10-15 ft.	45%
15-20 ft.	75%
Greater than 20 ft.	No Limit

Refer to section II, B. Construction Classification for Exterior Wall Fire Protection per Table 602 in this report.

DUCT AND AIR-TRANSFER OPENINGS

717.4 - Fire and smoke dampers will be provided with an approved means of access, not affecting the integrity of the fire resistance rated assemblies. Access points will be permanently identified on the exterior by a label having letters not less than 1/2 inch in height reading: FIRE/SMOKE DAMPER, SMOKE DAMPER or FIRE DAMPER.

717.5.2 - Fire Dampers will be provided at fire barriers.

717.5.3 - Combination fire/smoke damper will be provided at shaft enclosures.

MEANS OF EGRESS

Occupant Load Factors are assigned to each room or area to determine total occupant load. Table 1004.1.2 summarizes the Occupant Load Factors that will be assigned to each room or area.

AREA USE	OCCUPANT LOAD FACTOR (sf/occ)
Accessory storage areas, mechanical equipment room	300 gross
Assembly - Concentrated (standing space)	5 net
Assembly - Concentrated (chairs, not fixed)	7 net
Assembly- Unconcentrated - Tables and Chairs	15 net
Assembly, Fixed Seats	As indicated on plans. Will include wheelchair and companion seating.
Business areas	150 gross
Warehouses	500 gross

MEANS OF EGRESS SIZING (SECTION 1005)

Stairways - 1005.3.1 The capacity, in inches, of means of egress stairways will be calculated by multiplying the occupant load served by stairway by a means of egress capacity factor of **0.3** inch per occupant, but will not be less than 44-inches per 1009.4.

Exception: Means of egress stairway capacity factor is allowed to be reduced to a factor of 0.2 inch per occupant in buildings equipped with an automatic sprinkler system and emergency voice/alarm communication system.

Means of egress components other than stairways (1005.3.2) will be calculated by multiplying the occupant load served by such component by a means of egress capacity factor of 0.2 inch per occupant.

Exception: Means of egress capacity factor, for other than stairway, is allowed to be reduced to a factor of 0.15 inch per occupant in buildings equipped with an automatic sprinkler system and emergency voice/alarm communication system.

ENCROACHMENTS (1005.7)

Doors when fully open will not reduce the required width by more than 7-inches. Doors in any position will not reduce the required width by more than one-half.

Handrail projections per section 1014.8 into the required width of stairways and ramps at each side will not exceed 4-1/2 inches at or below the handrail height.

MEANS OF EGRESS ILLUMINATION (1008.2)

The means of egress illumination level will not be less than 1 footcandle at the walking surface.

TWO-WAY COMMUNICATION (1009.8)

Two-way communication system is required at the elevator landing on each accessible floor that is one or more stories above or below the story of exit discharge.

DOORS (1010.1)

1010.1.1 - The minimum width of each door opening will be sufficient for the occupant load and provide a clear width of 32 inches. Clear openings of doorways with swinging doors will be measured between the face of the door and the stop, with the door open 90 degrees. Where a door opening includes two door leaves without a mullion, one leaf will provide a clear opening width of 32 inches.

1010.1.2.1 - Doors will swing in the direction of egress travel where serving a room or area containing an occupant load of 50 or more persons.

1010.1.6 - Landings will have a width not less than the width of the stairway or the door, whichever is greater. Doors in the fully open position will not reduce a required dimension by more than 7 inches. When a landing serves an occupant load of 50 or more, doors in any position will not reduce the landing to less than one-half its required width. Landings will have a length measured in the direction of travel of not less than 44 inches.

1010.1.8 - Door arrangement. Space between two doors in a series will be 48 inches minimum plus the width of a door swinging into the space.

1010.1.9.11 - Stairway doors. Interior stairway means of egress doors will be openable from both sides without the use of a key or special knowledge or effort.

STAIRWAYS (1011)

1023.1 Interior exit stairway will lead directly to the exterior of the building or will be extended to the exterior of the building with an exit passageway.

1023.2 Interior exit stairway will have a fire-resistance rating of not less than 2 hours where connecting four stories or more, and not less than 1 hour where connecting less than four stories.

1009.3.1.2 Exit access stairway enclosures will have a fire-resistance rating of not less than 2 hours where connecting four stories or more, and not less than 1 hour where connecting less than four stories.

1011.3 Stairways will have a minimum headroom clearance of 80 inches measured vertically from a line connecting the edge of the nosings. Headroom will be continuous above the stairway to the point where

the line intersects the landing below, one tread depth beyond the bottom riser. The minimum clearance will be maintained the full width of the stairway and landing.

1011.5.2 Stair riser heights will be 7 inches maximum and 4 inches minimum. Tread depths will be 11 inches minimum.

1011.6 Stairway landings. The width of landings will not be less than the width of stairways they serve. Where the stairway has a straight run the depth need not exceed 48 inches. Doors opening onto a landing will not reduce the landing to less than one-half the required width. When fully open, the door will not project more than 7 inches into a landing.

1011.7.3 Enclosure under interior stair. The walls and soffits within enclosed usable spaces under enclosed and unenclosed stairways will be protected by 1-hour fire-resistance-rated construction or the fire-resistance rating of the stairway enclosure, whichever is greater. Access to the enclosed space will not be directly from within the stair enclosure.

1011.11 (1014.2) Handrail. Handrail height, measured above stair tread nosings will be not less than 34 inches and not more than 38 inches.

EXIT SIGNS (1013)

1013.1 The path of egress travel to exits and within exits will be marked by readily visible exit signs to clearly indicate the direction of egress travel to occupants. Intervening means of egress doors within exits will be marked by exit signs. Exit sign placement will be such that no point in an exit access corridor or exit passageway is more than 100 feet or the listed viewing distance for the sign, whichever is less, from the nearest visible exit sign.

Exceptions:

Exit signs are not required in rooms or areas that require only one exit or exit access.

Main exterior exit doors or gates that are obviously and clearly identifiable as exits need not have exit signs where approved by the building official.

1013.4 Raised character and Braille exit signs stating EXIT in raised characters and Braille and complying with ICC A117.1 will be provided adjacent to each door to an exit stairway, an exit ramp, an exit passageway and the exit discharge.

1013.6.2 The face of an exit sign illuminated from an external source will have an intensity of not less than 5 footcandles.

1013.6.3 Exit signs will be illuminated at all times. To ensure continued illumination for a duration of not less than 90 minutes in case of primary power loss, the sign illumination means will be connected to an emergency power system provided from storage batteries, unit equipment or an on-site generator.

GUARDS (1015)

1015.2 Guards will be located along open-sided walking surfaces, including mezzanines, equipment platforms, stairs, ramps and landings that are located more than 30 inches measured vertically to the floor or grade below at any point within 36 inches horizontally to the edge of the open side.

1015.3 Guards will not be less than 42 inches high, measured vertically from the adjacent walking surfaces.

1015.4 Required guards will not have openings which allow passage of a 4-inch diameter sphere from the walking surface to the required guard height.

Exceptions:

From a height of 36 inches to 42 inches, guards will not have openings which allow passage of a sphere 4-3/8 inches in diameter.

The triangular openings at the open sides of a stair, formed by the riser, tread and bottom rail will not allow passage of a sphere 6 inches in diameter.

At elevated walking surfaces for access to and use of electrical, mechanical or plumbing systems or equipment, guards will not have openings which allow passage of a sphere 21 inches in diameter.

COMMON PATH OF TRAVEL WITH SPRINKLER SYSTEM PER TABLE 1006.2.1

B occupancy 100 feet.

S occupancy 100 feet.

NUMBER OF EXITS (1006)

Two exits or access to exits from any floor will be provided per Table 1006.2.1.

B Occupancies that exceed 49 occupants

S Occupancies that exceed 29 occupants

1006.3.1 Three exits or access to exits per floor will be provided with an occupant load of 501 to 1,000. Four exits or access to exits will be provided with an occupant load greater than 1,000.

1007.1.1, Where two exits or access to exits are required, the exits will be placed a distance apart equal to not less than one-half of the length of the maximum overall diagonal dimension of the area to be served measured in a straight line between exits.

Where a building is equipped throughout with an automatic sprinkler system the separation distance of the exit doors or exit access doorways will not be less than one-third of the length of the maximum overall diagonal dimension of the area served.

EXIT TRAVEL DISTANCE WITH SPRINKLER SYSTEM PER TABLE 1017.2

B Occupancy 300 feet

S-1 Occupancy 250 feet

DEAD-END (1020.4)

No dead ends in corridors more than 20 feet in length.

In B and S occupancies where the building is equipped throughout with an automatic sprinkler system the length of the dead-end corridors will not exceed 50 feet.

A dead end corridor is not limited where the length of the dead-end corridor is less than 2.5 times the width of the dead-end corridor.

INTERIOR FINISH

Interior wall and ceiling finish materials classified in accordance with ASTM E 84 or UL 723 per 803.1.1.

Class A interior wall and ceiling finish is characterized by the following:

Flame spread, 0-25

Smoke development, 0-450

Class B interior wall and ceiling finish is characterized by the following:

Flame spread, 26-75

Smoke development, 0-450

Class C interior wall and ceiling finish is characterized by the following:

Flame spread, 76-200

Smoke development, 0-450

TEXTILE WALL COVERINGS

803.5 - If used, textile wall coverings, including materials having woven or non-woven, napped, tufted, looped, or similar surface, will have a Class A rating.

Interior Wall and Ceiling Finish requirements by occupancy per Table 803.13

SPRINKLERED			
GROUP	Exit enclosures and exit passageway	Corridors	Rooms and enclosed spaces
B	B	C	C
S-1	C	C	C

Interior floor finish materials classified in accordance with NFPA 253 per 804.2.

Class I interior floor finish is characterized by a critical radiant heat flux not less than 0.45 W/cm² or greater.

Class II interior floor finish is characterized by a critical radiant heat flux not less than 0.22 W/cm² but less than 0.45 W/cm² or greater.

Minimum critical radiant flux per 804.4.2

The minimum requirements for interior floor finish and floor coverings materials in exit enclosures, exit passageways and corridors will not be less than Class II in Group B and S. In all areas, the floor covering will comply with DOC FF-1 "pill-test".

The required floor finish ratings to be reduced when an automatic sprinkler system is provided throughout the building:

Class II materials are permitted in areas where class I materials are required.

Materials complying with DOC FF-1 "pill-test" are permitted in areas where class II materials are required.

Trim and Incidental Finishes

806.2 - The amount of noncombustible decorative material is not limited.

806.3 - The permissible amount of decorative materials meeting the flame propagation performance criteria of NFPA 701 will not exceed 10 percent of the specific wall or ceiling area to which it is attached.

The amount of fabric partitions suspended from the ceiling and not supported by the floor in Group B is unlimited.

806.7 - Interior trim will have a minimum Class C flame spread and smoke development index. Combustible trim will not exceed 10 percent of the specific wall or ceiling area to which it is attached.

806.8 - Interior floor base that is 6-inches or less in height will be tested in accordance with NFPA 253 and will not be less than Class II. Where Class I floor finish is required, floor-wall base will be Class I.

SUPPRESSION

903 - Automatic Sprinkler Protection

903.3.1.1 - An automatic sprinkler system will be provided throughout the entire building, designed and installed in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems.

905.4 Location of Class I standpipe hose connections. Class I standpipe hose connections will be provided in all of the following locations:

In every required stairway, a hose connection will be provided for each floor level above or below grade. Hose connections will be located at an intermediate floor level landing between floors, unless otherwise approved by the fire code official.

906 - Portable Fire Extinguishers

Fire extinguishers will be provided throughout the building in accordance with the International Fire Code and the National Fire Protection Association (NFPA) 10, Standard for Portable Fire Extinguishers.

Multi-purpose portable fire extinguishers (Class ABC) will be provided throughout per the size and distribution requirements identified in NFPA 10.

FIRE ALARM AND DETECTION SYSTEMS

FIRE ALARM AND DETECTION SYSTEMS

907.2 Group B and S-1 - A manual fire alarm system is not required where the building is equipped throughout with an automatic sprinkler system and the occupant notification appliance will activate throughout notification zones upon sprinkler waterflow.

907.5.2.3 Visual Alarms notification appliances will be provided in public and common areas.

916 – Emergency Responder Radio Coverage

916.1 - Emergency responder radio coverage will be provided in all new buildings in accordance with Section 510 of the International Fire Code.

510, IFC - All buildings will have approved radio coverage for emergency responders within the building based upon the existing coverage levels of the public safety communication systems of the jurisdiction at the exterior of the building. This section will not require improvement of the existing public safety communication systems.

Exceptions:

Where approved by the building official and the fire code official, a wired communication system in accordance with Section 907.2.13.2 will be permitted to be installed or maintained in lieu of an approved radio coverage system. Where it is determined by the fire code official that the radio coverage system is not needed.

ELEVATORS

3001.3 – Elevators and Escalators will conform to ASME A17.1, Safety Code for Elevators and Escalators. Passenger elevators on an accessible route will be accessible.

3002.3 - An approved pictorial sign of a standardized design will be posted adjacent to each elevator on all floors instructing occupants to use the stairs, not the elevator in case of fire. The sign should read, "IN FIRE EMERGENCY, DO NOT USE ELEVATOR. USE THE STAIRS."

3004.1 – Elevators penetrating more than three stories will be provided venting for smoke and hot gases.

3002.9 - Plumbing and mechanical systems are not permitted in an elevator shaft and plumbing equipment is prohibited in elevator machine rooms.

Floor drains: sumps and sump pumps are permitted at the base of a shaft if they are indirectly connected to the plumbing system.

3005.1 - An approved means of access will be provided to elevator machine rooms and overhead machinery space.

3005.4 - Elevator machine rooms outside of but attached to a hoistway and with openings into the hoistway will be enclosed in the same construction fire-resistance of the hoistway enclosure.

3005.6 Plumbing systems will not be located in elevator equipment rooms.

Refer to section III, B., c. for elevator lobby requirements in this report.

FIRE DEPARTMENT ACCESS

The following requirements for fire department access are per 2018 IFC:

Section 503 – Fire Apparatus Access Roads

Fire apparatus access roads will extend to within 150 feet of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building or facility.

Exception: The fire code official is authorized to increase the dimension of 150 feet where:

The building is equipped throughout with an approved automatic sprinkler system

Fire apparatus access roads cannot be installed because of location on property, topography, waterways, nonnegotiable grades or other similar conditions, and an approved alternative means of fire protection is provided.

503.2.1 Fire apparatus access roads will have an unobstructed width of not less than 20 feet, exclusive of shoulders.

503.2.3 Fire apparatus access roads will be designed and maintained to support the imposed loads of fire apparatus and will be surfaced so as to provide all-weather driving capabilities.

503.2.5 Dead-end fire apparatus access roads in excess of 150 feet in length will be provided with an approved area for turning around fire apparatus.

503.2.7 The grade of the fire apparatus access road will be within the limits established by the fire code official based on the fire department's apparatus.

503.3 Where required by the fire code official, approved signs or other approved notices or markings that include the words NO PARKING—FIRE LANE will be provided for fire apparatus access roads to identify such roads or prohibit the obstruction thereof. The means by which fire lanes are designated will be maintained in a clean and legible condition at all times and be replaced or repaired when necessary to provide adequate visibility.

503.4 Fire apparatus access roads will not be obstructed in any manner, including the parking of vehicles. The minimum widths and clearances will be maintained at all times.

503.5 The fire code official is authorized to require the installation and maintenance of gates or other approved barricades across fire apparatus access roads.

Appendix D – Aerial Fire Apparatus Access Roads

D105.1 Buildings or portions of buildings or facilities exceeding 30 feet in height above the lowest level of fire department vehicle access will be provided with approved fire apparatus access roads capable of accommodating fire department aerial apparatus. Overhead utility and power lines will not be located within the aerial fire apparatus access roadway.

D105.2 Aerial fire apparatus access roads will have a minimum unobstructed width of 26 feet, exclusive of shoulders, in the immediate vicinity of any building or portion of building more than 30 feet in height.

D105.3 At least one of the required access routes meeting this condition will be located within a minimum of 15 feet and a maximum of 30 feet from the building and will be positioned parallel to one entire side of the building.

PLUMBING FIXTURE COUNT

2902.1 – Minimum number of plumbing fixtures will be provided as shown in Table 2902.1

Description	Water Closets		Lavatories		Drinking Fountains	Other
	M	F	M	F		
B Business, Professional Services	1 per 25 for the first 50 1 per 50 for the remaining		1 per 40 for the first 80 1 per 80		1 per 100	1 service sink
S Storage	1 per 100		1 per 100		1 per 1000	1 service sink

2902.1.1 – The required number of plumbing fixtures will be distributed equally between the sexes. The occupant load will be composed of 50 percent of each sex.

2902.3.2 – The required toilet facilities will be located not more than one story above or below the space required to have toilet facilities and the path of travel not to exceed 500 feet.

Urinals per Table 2902.1:

Substitution of water closets with urinals in each toilet room will not be substituted for more than 67 percent of the required water closets in assembly and educational occupancies. Urinals will not be substituted for more than 50 percent of the required water closets in all other occupancies.

FIRE PROTECTION NARRATIVE

FIRE PROTECTION DESIGN OBJECTIVE

The following describes the basic fire protection system work to be performed, and materials provided. The project will utilize fire protection system components that are cost effective, energy efficient, environmentally friendly, and easily maintainable. The design will promote forward thinking in engineering and be flexible in design.

CODES AND STANDARDS

The following codes and standards will be used as references for the basis of design for the fire alarm system:

- 2018 International Building Code with City Amendments (IBC)
- 2018 International Fire Code with City Amendments (IFC)
- NFPA 13 – Standard for the Installation of Sprinkler Systems, 2016

DESIGN SUMMARY

The new Idaho State Police (ISP) Forensic Services Crime Lab building will be built in 3 phases. Phase 1 will be one story above grade, with phase 2 being an addition to phase 1 and two stories above grade.

The building will be protected throughout by an automatic wet sprinkler system in accordance with IFC and NFPA 13. A manual wet standpipe system is not required since the highest occupiable floor will be less than 30 feet above the lowest level of fire department vehicle access.

A new dedicated 6-inch fire protection service will be provided to the combined plumbing and fire riser room on the east side of the phase 1 building.

Level 1 of phase 1 and 2 will be protected by a single zone control assembly located in the combined plumbing and fire riser room. Level 2 of phase 2 will be protected by an additional zone control assembly located on level 2 of the east side stairwell.

As part of phase 2, a preassembled double interlock preaction system will be provided to protect the casefile, vault freezer, refrigerator, and dry storage rooms on level 1. The location of the system will be determined during the design process.

DESIGN CRITERIA

Currently, a hydrant flow test is not available to determine if a fire pump is required to supplement the water supply for the fire protection sprinkler system in the building. It is assumed based on the height of the building and existing pressure in the area that a fire pump will not be required. When flow test information is made available, a hydraulic calculation will be performed to verify a fire pump is not required. The design assumes the city water supply is sufficient to provide the sprinkler system demand.

A 6-inch dedicated fire protection water service will be provided into the combined plumbing and fire riser room, located on the west side of the building with access to the exterior. A double check vertical backflow preventer will be provided within the riser room.

A yard mounted fire department connection (FDC) located on the southwest side of the building as part of phase 1. The FDC will serve all phases and portions of the sprinkler system. The FDC location will be confirmed with the fire code official.

Level 1 of phase 1 and 2 shall be protected by a single zone control assembly located in the riser room. Level 2 of phase 2 shall be protected by a single zone control assembly located in the east side stairwell of phase 2. All zone control assembly drawings shall discharge to the exterior and provided with a splash pad.

Waterflow indication, and tamper switch position supervisory signals will be monitored by the fire alarm control panel. During a fire event (waterflow), an outdoor bell and strobe will be located at the exterior of the riser room.

Zone control assemblies will have check valves, isolation valves with tamper switches, water flow indicating devices, test and drain assemblies. The sprinkler systems shall be hydraulically designed and installed in accordance with NFPA 13.

As part of phase 2, a preassembled double interlock preaction system with integral compressed nitrogen will be provided to protect the casefile, vault freezer, refrigerator, and dry storage rooms on level 1. The preaction system will be interconnected with area smoke detection.



Placer County Coroner Facility

SPRINKLER SYSTEM HYDRAULIC CRITERIA

Sprinkler system demand will meet NFPA 13 requirements as follows:

Occupancy	Hazard Category	Sprinkler Design Demand	Hose Allowance
Offices, meeting rooms	Light hazard	0.1 gpm over 1500 sq.ft	100 gpm
Utility, mechanical, electrical, storage, equipment rooms	Ordinary hazard group 1	0.15 gpm over 1500 sq ft	250 gpm
Evidence storage, chemistry labs, vehicle processing	Ordinary hazard group 2	0.2 gpm over 1500 sq ft	250 gpm

SPRINKLER TYPE AND STYLE

Sprinkler style and finish will be selected to blend in with architectural finishes. Sprinkler piping will be routed concealed where possible and painted to match finish. In less architecturally sensitive areas, like mechanical rooms, electrical rooms, and janitor closets, upright sprinklers will be provided on unpainted pipe. In areas with ceilings, sprinklers will be concealed pendent, with cover plates to match the ceiling color. Areas with baffled ceiling elements may require the use of pendent sprinklers. These areas will be further defined during the design phase of the project. All light and/or ordinary hazard areas will be provided with quick response sprinklers.

Extended coverage sprinklers will be provided in corridors, open office areas, and other areas permitted by NFPA 13. Dry barrel corrosion resistant sidewall sprinklers attached to wet sprinkler piping will be provided to protect the exterior balcony located on level 2 of phase 2. Additional areas may require dry barrel sprinklers to be utilized. These areas will be determined during the design phase of the project.

PIPE MATERIALS

Sprinkler pipe with a diameter of less than 2.5" shall be schedule 40 black steel. Sprinkler pipe with a diameter of 2.5" and larger may be schedule 10 or schedule 40 pipe. Roll grooves are permitted for all pipe both schedule 10 and 40. Cut grooves are permitted for schedule 40 pipe size 4" and larger only. Threaded piping is not permitted. Sprinkler piping exposed to outside atmosphere shall be painted with corrosion resistant paint.

FIRE ALARM NARRATIVE

FIRE ALARM DESIGN OBJECTIVE

The following describes the basic fire alarm system work to be performed, and materials provided. The project will utilize fire alarm systems that are cost effective, energy efficient, environmentally friendly, and easily maintainable. The design will promote forward thinking in engineering and be flexible in design.

CODES AND STANDARDS

The following codes and standards will be used as references for the basis of design for the fire alarm system:

- 2018 International Building Code with City Amendments (IBC)
- 2018 International Fire Code with City Amendments (IFC)
- 2018 International Mechanical Code with City Amendments (IMC)
- NFPA 70 – National Electrical Code, 2017
- NFPA 72 – National Fire Alarm Signaling Code, 2016

DESIGN SUMMARY

The new Idaho State Police (ISP) Forensic Services Crime Lab building will be provided with a horn/strobe fire alarm system. The fire alarm system will be a complete addressable fire alarm system with all addressable control relays and interfaces in accordance with NFPA 72. Automatic smoke detectors will be provided in locations required by the IFC.

The two-story lab will be built in 3 phases. The fire alarm system will be designed to serve all 3 phases of the building. The main fire alarm control panel will be in the SES room located on the east side and installed as part of phase 1 of the building. A remote annunciator panel will be located in the vestibule located west side in the phase 1 portion of the building. An additional remote annunciator panel will be located in the main vestibule on the southwest side of the building as part of phase 2.

DESIGN CRITERIA

New notification appliances and initiating devices will be provided throughout the building to provide a complete fire alarm system in accordance with the IFC and NFPA 72. The fire alarm system shall be designed to accommodate all 3 phases of the project with at least 20% spare capacity at the completion of each phase of the project.

Class B wiring will be provided for all fire alarm system circuits, except for network circuits which will be Class A. All fire alarm wiring will be installed in metal raceways for level 1 survivability in accordance with NFPA 72. Fire alarm system conduit shall be pre-finished, red color. Alarm, supervisory, and trouble signals will communicate to the designated supervising station via radio transmitter.

Addressable manual pull stations will be provided at each exit from the building and no more than 200 feet from any part of the building.

Audible/visual notification appliances shall be ADA compliant and NFPA/UL equivalent. Visual notification appliances will be located no more than 15 feet from the end of a corridor and no more than 100 feet on center in corridors. Visual notification appliances will also be installed in restrooms and common use areas. Additional visual/audible notification appliances will be located at exterior portions of the building where required (exterior balcony, outside combined plumbing/riser room, etc.). Audibility of the fire alarm notification signals will be provided throughout the building with visual coverage for all occupied spaces.

The mechanical HVAC systems will be provided with duct smoke detectors as required by the IMC. Return air duct smoke detectors shall be provided for all Air Handling Units over 2,000 cfm as required by IMC. Relays will be provided to shut down each air handling unit in response to supervisory signal generated by its associated detector. Smoke dampers will be wired to dedicated 120-volt circuits from emergency panels. Circuits will be controlled by fire alarm control modules activated by the fire alarm control panel so dampers close upon smoke detection at the serving air handling unit or in the space served.

All sprinkler system water flow and tamper switches shall be monitored by the fire alarm system, including those in zone control assemblies and system isolation valves. Each device will be equipped with an addressable interface that will be wired into the SLC loops. All waterflow switches shall have separate addresses.

Occupant audible and visible notification appliances will automatically activate upon a water flow switch signal.

The fire alarm system will be provided with secondary power by means of a battery backup, which will have sufficient capacity to provide a minimum of 24-hour standby service under normal conditions followed by not less than 5 minutes in alarm.

As part of phase 2, smoke detectors will be provided outside elevators for elevator recall and in other areas required by NFPA 72. Heat detectors will be provided in elevator shafts and within 24 inches of sprinklers in the elevator pit. Additionally, photoelectric smoke detectors will be provided throughout the casefile, vault freezer, refrigerated, and dry storage rooms for interconnection with a preassembled double interlock preaction system.

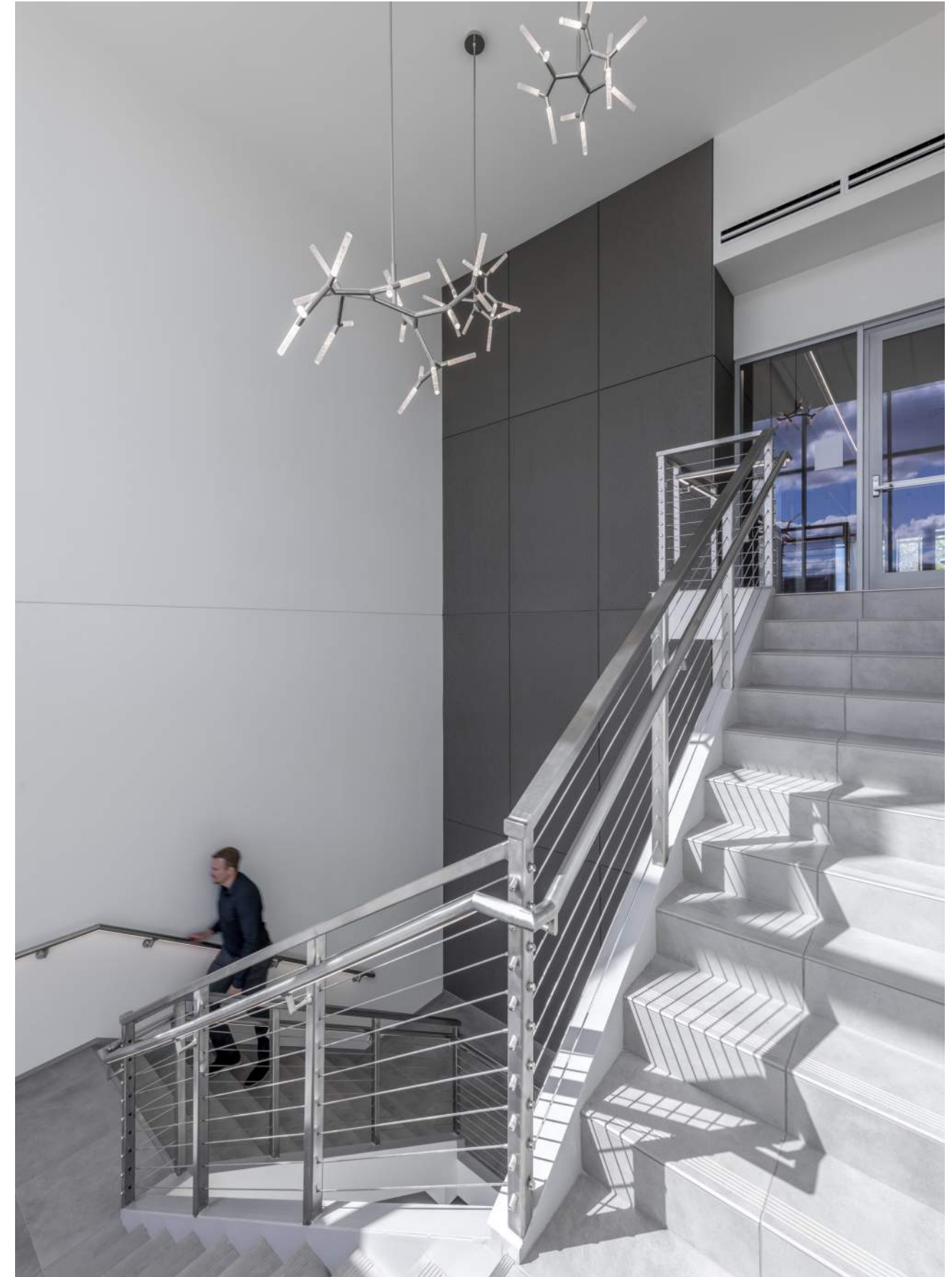
EMERGENCY RESPONDER COMMUNICATION COVERAGE

An Emergency Responder Radio Coverage (ERRC) System will be provided in accordance with NFPA 72 and IFC 510. The ERRC system shall be determined to be required once phase 1 is completed. If required to be installed as part of phase 1 once testing is completed, the existing system shall be designed for future expansion to all phases of the building.

If in field testing and surveys show, after the building is complete and constructed, that the existing public safety communications system radio signal strengths are satisfactory the building code official shall be approached to waive the requirement for a ERRC to be provided in accordance with IFC 150.1 exception 2.

TWO-WAY COMMUNICATION SYSTEM

As part of phase 2, a two-way communication system (TWCS) will be provided at each accessible elevator landing located above the level of exit discharge. The TWCS central control panel will be located in the phase 2 southwest vestibule and immediately adjacent to the remote annunciator panel. The TWCS shall have a timed automatic telephone dial-out capability to a designated monitoring station with point identification. The TWCS shall be fully recessed with a telephone for communication with elevator landings located above the level of exit discharge.



Hamilton County Coroner Facility

SCHEMATIC DESIGN COST ESTIMATE

PHASE 1 PROJECT COSTS

New Building and Site		Takeoff Quantity	Total Cost / Unit	Total Amount
Building		16,000 sqft	\$ 896.97 /sqft	\$ 14,351,475.00
Add Div 12 sitework (4 acres)		158,240 sqft	\$ 12.01 /sqft	\$ 1,900,643.00
Subtotal Building + Site				\$ 16,252,118.00
Contractor General Conditions and Profit				
General Conditions	18 months	\$ 65,008.47	0.40%	\$ 1,170,152.50
Pre-Construction Services			0.68%	\$ 110,514.40
Sub default insurance			1.25%	\$ 203,151.48
Liability Insurance			2.000%	\$ 325,042.36
Construction Contingency			3.0%	\$ 541,829.36
Winter Weather Protection				\$ 80,000.00
Traffic Control				\$ 100,000.00
Profit			4.5%	\$ 845,226.36
Payment and performance bond			1.000%	\$ 162,521.18
Subtotal				\$ 3,538,437.64
Design Duration DD-CD				
Starting Date	Dec-24			
Total Building and Site / General Conditions Costs W/ Escalation				\$ 19,790,555.64
Total W/ Escalation				\$ 20,844,082.66
Permit/Bid submittal	Oct-25			
DPW Funds				
DPW Contingency			5.00%	\$ 1,042,204.13
Misc. (utilities/impact fees/etc.)				\$ 300,000.00
Subtotal				\$ 1,342,204.13
Anticipated Soft Costs				
DOPL Plan Review Fees (original) https://dopl.idaho.gov/wp-content/uploads/2023/10/BLD-Plan-Review-Fee-Table.pdf				\$ 36,783.00
Design Professionals Reimbursables				\$ 41,688.17
Complete	Design Fees Programming			\$ 220,000.00
Complete	Design Fees SD (Phase 1 and 2 buildout)			\$ 1,740,000.00
Design Fees DD-CA (Phase 1 buildout)				\$ 2,000,000.00
Additional design Liability Insurance required				\$ 28,000.00
	7 years	\$ 4,000.00		\$ 416,881.65
F.F.E.				\$ 33,350.53
1000 Test & Balance				\$ 150,000.00
02000 Misc 1				\$ 26,184.44
03000 Commissioning				\$ 41,688.17
07000- testing during construction				\$ 41,688.17
Subtotal				\$ 4,734,575.95
Soft Costs Incurred				
07000 Advertising				\$ 1,000.00
05000 Site Survey				\$ -
06000 Atlas - Soil Investigation				\$ -
Subtotal				\$ 1,000.00
Project Total				\$ 26,921,862.75

PHASE 1 CONSTRUCTION COST BREAKDOWN BY DIVISION

Foundation	\$ 611,917.00
Superstructure	\$ 1,150,980.00
Exterior Enclosure	\$ 1,052,521.00
Roofing	\$ 519,120.00
Interior Construction	\$ 4,739,213.00
Conveying	\$ -
Plumbing	\$ 814,080.00
HVAC	\$ 2,001,280.00
Fire Protection	\$ 101,760.00
Electrical	\$ 1,373,760.00
Communications	\$ 455,280.00
Equipment	\$ 1,523,500.00
Furnishings	\$ 8,064.00
Site Preperation	\$ 297,323.00
Site Improvements	\$ 687,070.00
Site Utilities	\$ 311,250.00
Electrical Site Improvements	\$ 440,000.00
Site Communication	\$ 130,000.00
Miscellaneous Site Construction	\$ 35,000.00
Subtotal	
	\$ 16,252,118.00

PHASE 2 PROJECT COSTS

New Building and Site	Takeoff Quantity	Total Cost / Unit	Total Amount
Building	46,500 sqft	\$ 713.53 /sqft	\$ 33,179,244.00
Add Div 12 sitework (4 acres)	134,990 sqft	\$ 9.37 /sqft	\$ 1,264,906.00
Subtotal Building + Site			\$ 34,444,150.00
Contractor General Conditions and Profit			
General Conditions	24 months	\$ 137,776.60 0.40%	\$ 3,306,638.40
Pre-Construction Services		0.68%	\$ 234,220.22
Active Project Site		2.00%	\$ 688,883.00
Sub default insurance		1.25%	\$ 430,551.88
Liability Insurance		2.000%	\$ 688,883.00
Construction Contingency		3.0%	\$ 1,193,799.79
Winter Weather Protection			\$ 200,000.00
Traffic Control			\$ 100,000.00
Profit		4.5%	\$ 1,857,920.68
Payment and performance bond		1.000%	\$ 344,441.50
Subtotal			\$ 9,045,338.47
Schematic Design Kickoff (project to go on hold after SD's until funds are raised for buildout, see escalation for anticipated duration)			
Starting Date	Apr-24		
Total Building and Site / General Conditions Costs			\$ 43,489,488.47
Total W/ Escalation	24 months	0.52% /mo	\$ 49,254,262.15
Design Duration DD-CD			
Starting Date	Apr-26		
Total Building and Site / General Conditions Costs W/ Escalation			\$ 49,254,262.15
Total W/ Escalation	8 months	0.52% /mo	\$ 51,340,921.21
Permit/Bid submittal	Dec-26		
DPW Funds			
DPW Contingency		5.00%	\$ 2,567,046.06
Misc. (utilities/impact fees/etc.)			\$ 300,000.00
Subtotal			\$ 2,867,046.06
Anticipated Soft Costs			
DOPL Plan Review Fees (original) https://dopl.idaho.gov/wp-content/uploads/2023/10/BLD-Plan-Review-Fee-Table.pdf			\$ 53,583.00
Design Professionals Reimbursables		0.20%	\$ 102,681.84
Design Fees SD-CA (SD Phase Complete)		10.00%	\$ 4,925,426.22
Additional design liability insurance required	7 years	\$ 4,000.00	\$ 28,000.00
F.F.E.		2.00%	\$ 1,026,818.42
1000 Test & Balance		0.16%	\$ 82,145.47
02000 Misc 1			\$ 150,000.00
03000 Commissioning		0.74%	\$ 66,935.50
07000 - testing during construction		0.20%	\$ 102,681.84
Subtotal			\$ 6,538,272.30
Soft Costs Incurred			
07000 Advertising			\$ 1,000.00
05000 Site Survey			\$ -
06000 Atlas - Soil Investigation			\$ -
Current Design Approval- Programming			\$ -
Subtotal			\$ 1,000.00
Project Total			\$ 60,747,239.57

PHASE 2 CONSTRUCTION COST BREAKDOWN BY DIVISION

Foundation	\$ 1,019,269.00
Superstructure	\$ 3,849,440.00
Exterior Enclosure	\$ 2,401,723.00
Roofing	\$ 823,820.00
Interior Construction	\$ 9,145,717.00
Conveying	\$ 280,000.00
Plumbing	\$ 2,231,184.00
HVAC	\$ 5,484,994.00
Fire Protection	\$ 293,898.00
Electrical	\$ 3,765,123.00
Communications	\$ 986,694.00
Equipment	\$ 2,875,631.00
Furnishings	\$ 21,751.00
Site Preperation	\$ 224,024.00
Site Improvements	\$ 380,882.00
Site Utilities	\$ 90,000.00
Electrical Site Improvements	\$ 440,000.00
Site Communication	\$ 130,000.00
Miscellaneous Site Construction	\$ -
Subtotal	\$ 34,444,150.00

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