

Organizational Background

Alabama Agricultural and Mechanical University (AAMU) is a historic, student-friendly and community-focused institution of higher learning. Reflecting on its heritage as a historical black college and university (HBCU) and a traditional 1890 land-grant institution, AAMU functions as a teaching, research and public service institution, including extension. Founded in 1875 by a former slave, Dr. William Hooper Councill, AAMU is a dynamic and progressive institution with a strong commitment to academic excellence. The serene, intimate campus is situated on “The Hill,” only a short distance from downtown Huntsville, the site of the school’s founding.

Alabama Agricultural and Mechanical University provides more than 60 undergraduate, graduate and certificate programs and concentrations, a diverse international faculty, 50 plus student organizations, and an extensive alumni network comprised of politicians, educators, entrepreneurs, doctors, lawyers, engineers, scientists, authors, artist, and more, many of whom are change agents on the local, national and international stage.

OBJECTIVE

We are currently in early phases of implementing a 288 + 144 strand OS2 Single-Mode Fiber Ring around the campus to allow for redundant connectivity between the core in the current data center (DC1) located in Carver Complex, and a new data center (DC2) located in the New Residence Hall. This new fiber will provide a direct connection from each data center to the 59 academic, administrative, and research locations across the campus as well as other physical security devices. By replacing the existing OM1 Fiber with OS2, we remove a foundational “bottleneck” by increasing backbone throughput capabilities to greater than 100Gbps up to 2km, depending on the hardware that is interconnected. Network capacity will also be greatly increased to meet the demands of our faculty, staff, and students who depend on internet-connected technology more today than ever before. Additionally, this fiber ring will provide the ability to segment the network creating the Campus Commodity Network (AAMU-CCN), Research on the Hill (AAMU-RotH) Science DMZ, and the Residential Network (AAMU-ResNet).

1. Network Security

In an effort to keep up to date and ahead of the ever increasing risks present in the world of “CyberWarfare” and information security, we are changing the model upon which the “campus network” was traditionally built. It is no longer good enough to simply protect the perimeter of the network and implement Role based Access Controls (RBAC) and assume that the inside network is safe. We have to adapt to the ever-increasing threat of BYOD and compromised devices connecting via legitimate means, but wreaking havoc on unsuspecting users and systems. We are obligated to find new and innovative ways to protect the users who depend on the network while still providing the academic freedoms that are so critical to research and education environments such as ours.

Acknowledging the ever-growing dependence on mobile/wireless technology, AAMU seeks to improve wireless internet services across the campus in the residential dormitories, common areas, and classrooms. AAMU currently provides up to 3559 beds in 1394 Units, and services up to 7000 transient users in common areas. We are seeking a partner to provide managed wireless internet services and support for our students, allowing them to experience the high-quality internet, streaming, and gaming performance they demand along with the advanced services they need to excel in an academic environment.

To help in securing the network, we need to implement a Network Access Control solution that requires the onboarding / registration of every user and device that requests access. This will aide in the development of policies that will guide the AAMU-ITS dept. in micro-segmenting the network and analyzing the applications and resources needed to allow user to function without compromising the integrity of the network or its resources. It is our goal to move towards implementing the eduroam® platform which allows users to move from location to location around the world, and connect to the internet and resources needed by authenticating against their “home” location. This will allow us to segment our protected data systems and transition them to a zero-trust model, while maintaining the flexibility our users require on network segments that are secure, but less restricted so as not to interfere with their research and educational needs.

2. Network Segmentation

- **AAMU-ResNET** - The AAMU Residential Network will be a hybrid of a physically and virtually segmented network that provides high-speed internet, residential WiFi coverage, IPTV streaming services, and collaborative gaming services to our student body in the residence halls and common areas of the campus. With the introduction of the AAMU-ResNet,

we will transition from our existing 2 ISPs to a total of (3) 10x10Gbps business class circuits utilizing diverse pathways and entry points for our overall campus internet service.

- **AAMU-RotH** – The AAMU Research on the Hill Network will be the universities Science DMZ network. This will be a high-speed, low-latency network directly connected to Internet2 to facilitate the data transfer needs of both faculty and students performing research granting them access to resources outside our campus and otherwise outside their grasp.
- **AAMU-CCN** – The AAMU Campus Commodity Network will be our protected network that will house all of the sensitive data that is governed by regulatory compliance and is essential to how this university functions. This will be further micro-segmented utilizing our existing NGFW to filter all traffic between segments in a zero-trust model of access control. Utilizing this methodology, in compliance with NIST guidelines, reduces our compliance burden by reducing the attack surface of any one system, drastically decreasing the scope of any attack or potential breach.

3. Network Stability

Routing between AAMU-CCN, AAMU-RotH, and AAMU-ResNet will occur at the outside edge of the campus network, separating traffic according to pre-defined routing tables in the BGP routers. By utilizing multiple diverse redundant internet circuits to provide access to all three major network segments, network stability and up-time are exponentially increased at the end-user level. This multi-tiered system of access provides fail-over capabilities that allow the university to come as close to achieving the “five 9’s” of up-time commonly required by most corporate environments without restricting our end-users and exposing ourselves to excessive liability.

CURRENT SOLUTION

The current AAMU campus fiber plant consists mainly of OM1 Multi-Mode fiber installed on University owned utility poles spanning across the campus to each location originating from the Carver Complex North (Hollins Wing) Data Center location. This network of fiber optic cables has grown over the years and has been installed by multiple vendors using differing terminating procedures and techniques. The fiber itself, having been exposed to environmental factors has experienced damage/repairs in numerous locations caused by UV exposure, storm damage, automobile accidents, and other mitigating factors. The fiber optic cables themselves are 62.5/125 glass and are classified as OM1 fiber, which means at 850nm (wavelength of the light source), they have a bandwidth of 200 MHz-km, maximum attenuation of 3dB/km, and a typical maximum distance of 300 meters (at 100mbps). At a wavelength of 1300nm, they have a bandwidth of 500 MHz-km, max attenuation of 1dB/km, and typical max distance of 2km (at 100mbps) and 550meters (at 1000mbps).

The AAMU campus network is currently a hybrid between the traditional “Three-tier Hierarchical Network Model” and a dual spoke and hub topology. We are actively working to push routing out away from the core of the network to each individual building allowing us more flexibility and stability with redundant connections and fail-over capabilities in the event there is an outage in parts of the campus. We are currently a multi-homed network running External Border Gateway Protocol (eBGP) on the edge, and Open Shortest Path First (OSPF) protocol internally, to route traffic between our 2 ISP’s. Our primary ISP connection provides 5x5Gbps business class service to the internet. Our secondary ISP provides 500Mbps education class service to the Internet2 network and related peers. The current core layer of the network consists of 4 Layer 3 capable switches stacked together in pairs located in each of 2 diverse datacenter locations. The majority of the routing for the network is centralized in the core (DC1_Core) (See Decentralization). The entry point into most of the buildings act as layer 2 switches, though we have begun deploying layer 3 capable routers to priority locations.

The current wireless internet system consists of several generations of wireless technologies that have been deployed over the years on an “as-needed” basis. Most all existing wireless access points are currently connected to the network via Cat5/5e cabling which limits the bandwidth to the AP at 100Mbps. The wireless access points themselves consist of a mix of Foundry Ironpoint 200, Aruba AP105, Aerohive AP150W, AP250, AP550, and Ruckus R730 totaling roughly 665 WAPs.

The approximately (100) Foundry Ironpoint APs are stand alone un-managed devices to which we no longer have the ability to control or authenticate from a management perspective. The (340) Aruba AP105 APs are controlled by an on-site Aruba 6000 wireless controller located in our primary data center, and does not have any current licensing or maintenance coverage in place. The (283) Aerohive (10) AP150w, (253) AP250, & (20) AP550 devices are controlled by the new Extreme CloudIQ System, and does not have any current licensing or maintenance coverage in place. The (25) Ruckus R730 APs are managed by a Ruckus Virtual Smartzone appliance, and does have current licensing and maintenance coverage in place.

We have purchased two Ruckus data plane appliances and appropriate licensing for Cloudpath Network Access Control, but have decided to forgo the installation and configuration of these platforms in favor of seeking qualified support and management of said platform as part of this RFP due to lack of resources available among our own IT staff.

SCOPE OF WORK

Alabama A&M University (AAMU) is seeking proposals from interested offerors for the following services:

Campus Internet Services

- The Offeror shall provide Bulk Internet Services to the AAMU Residence Halls and Common Areas as defined in **Appendix B – AAMU-ResNET Locations**.
- The Offeror shall provide Bulk Internet Services to the Academic and Administrative areas as defined in **Appendix C – AAMU-CCN Locations**.
- The Offeror shall provide at least (3) diverse 10,000 x 10,000 internet circuits to be utilized by both the vendor and the organization as the backbone of the services to be provided in the locations designated in **Appendix B – AAMU-ResNET Locations** and **Appendix C – AAMU-CCN Locations**
- Offeror must operate its own nationwide redundant MPLS Network with presence in at least 25 data centers or colocation facilities across the United States
- Offeror shall provide monitoring of all traffic to identify and shutdown any Illegal activities
- Offeror must provide AAMU-ITS with a reporting dashboard showing real time property bandwidth, property stats, building stats, user stats, tickets, ticket stats

TECHNICAL SUPPORT

In the event of an unscheduled outage, or other major issue, AAMU-ITS dept. will expect to be able to receive assistance from the Offeror via phone anytime, 24x7x365. We understand that most problems that would rise to this level will likely be beyond either of our control, but in the event a technician needs to be dispatched to resolve an issue caused by the Offeror, the Offeror's equipment, or the Offeror's system, we expect the issue to be resolved in no more than 4 hours.

All maintenance that may result in an outage needs to be coordinated with AAMU-ITS dept. no less than 2 weeks in advance so that we can properly schedule and communicate the maintenance window with AAMU Faculty, Staff, and Students to ensure loss of service does not interrupt other important school related services (e.g. testing, finals, etc.)

- Offeror must be headquartered, or have a physical presence, within the State of Alabama.
- Offeror shall provide AAMU-ITS Ticketed support 24x7x365 with an SLA of less than 4 hours.
- Offeror must provide an online student support portal that is available 24x7x365
- Offeror must provide a telephone support center that is available 8x5x52

REGULATORY COMPLIANCE

Vendors must be able to provide documentation demonstrating compliance with all regulations that are relevant to this market. Moreover, vendors should have a plan in place to ensure that they stay up to date on any relevant regulatory changes. Specific regulations affecting the organization include the following:

- **CCPA** – California Consumer Privacy Act
- **CIPA/COPPA** – Children's Internet Protection Act / Children's Online Privacy Protection Act
- **EUGDPR** – European Union General Data Protection Regulation
- **FERPA** - Family Educational Rights and Privacy Act
- **GDPR** - General Data Protection Regulation
- **GLBA** - Gramm-Leach-Bliley Act
- **HIPAA** - Health Insurance Portability and Accountability Act
- **IDEA** - Individuals with Disabilities Education Act
- **NIST** - National Institute of Standards and Technology Cybersecurity Framework

- **NSLA** - National Summer Learning Association
- **PCI-DSS** - Payment Card Industry Data Security Standard
- **PPRA** – Protection of Pupil Rights Amendment

Selection Criteria

Selected provider must possess the ability to perform the full scope of work and must adhere to all provisions as laid out below:

- Offeror must be able to provide on-site support within 4 hours if needed.
- Offeror must operate its own nationwide redundant MPLS Network with presence in Atlanta, GA., Chicago, IL., and Dallas, TX. with ability to provide cross-connect access to SoX or Internet2.
- Offeror must have the ability to take over all campus wireless internet and provide managed wireless as a service (WaaS) with 24x7x365 customer support.
- Offeror must have the ability of assuming responsibility for all Advanced Internet Routing Protocols such as MPLS, BGP, & OSPF for campus internet services.
- Offeror must have the capability to provide IPTV/Streaming services as needed.
- Offeror must have the capability to provide Video Gaming Network Services as needed.
- Offeror must have the capability of providing Virtual Private Network (VPN) services as needed
- Offeror will assign a dedicated representative(s) to work with the University and describe additional modes of communication that may be used. Excellent customer service and rapid response to urgent needs will be provided. The dedicated representative will meet with University administration as necessary. In your submitted proposal, please identify and introduce who will be assigned as AAMU's representative and specifically describe their services.
- The Offeror will provide services to be billed annually based on AAMU's fiscal year.

Interested offerors should include information on the services they can provide including:

- Support desk procedures and hours of operations / On-Site Coordinator
- Technical Support / Customer Support / User Account Creation/Billing
- SD-WAN / Co-location / Cross-connect / Disaster Recovery capabilities
- Security Tools and Anti-Malware Programs available to users

If awarded by the University, the successful Offeror of this RFP will be responsible for providing internet and wireless services to AAMU-ResNET for the length of this contract. If implemented correctly and favorable feedback is received from University staff and residents, AAMU may look to expand this service to AAMU-CCN as well. The University reserves the right to renegotiate prices and services should this service be expanded to cover other locations on campus.

CONTRACT TERMS

Vendors should provide all services described herein for the following period: 5 years from the date of execution of the contract. The contract must also meet these additional terms and conditions:

- Billing will be annual with the effective billing dates coinciding with our Fiscal Year.
- The organization, at its sole discretion, will have the option to renew annually by agreement of both parties.
- Annual renewal will be contingent upon the University's needs and satisfaction with the services performed and the overall performance of the Contractor.
- The University reserves the right to renegotiate any term and/or condition as may be necessary to meet requirements for any renewal period. The Successful Offeror will be advised of any proposed revisions prior to the renewal period.
- If the University chooses not to renew the contract, all data history will be provided to the University.

Appendix A

Terms and Definitions

- **“AAMU”, “Alabama A&M”, “Alabama A&M University”** shall mean Alabama Agricultural and Mechanical University
- **"AAMU-CCN"** The Alabama A&M University Campus Commodity Network is a highly secured, zero-trust network used to facilitate the business communication needs of the University. This network houses the data and systems that are essential to the University and are frequently subjected to regulatory or compliance audits for information security.
- **"AAMU-ResNet"** The Alabama A&M University Residential Network is the general internet services provided to the student body for academic and personal use. This network is a secured network, but generally provides only standard residential security measures to ensure that the end user is provided the freedom and flexibility to access resources needed for learning.
- **"AAMU-Roth"** The Alabama A&M University Research on the Hill network is the campus Science DMZ which is used for Research and Education collaboration among researchers, faculty and students. This network is a high-speed, low-latency network that is used to facilitate large data transfers with direct and unfiltered access to Internet2.
- **"Academic Year"** The nine (9) calendar months beginning mid-August of each year and ending mid-May of the following year.
- **"Appendix", or "Appendices"** are written or graphic instructions issued by Alabama A&M University prior to the receipt of Proposals that modify or interpret the Request for Proposal documents by addition, deletion, clarification, or correction.
- **"Border Gateway Protocol" or "BGP"** A standardized exterior gateway protocol designed to exchange routing and reach-ability information among autonomous systems (AS) on the Internet.
- **“Bulk Internet Services”** Internet access services provided by Offerer.
- **"Competitive Negotiation"** The method authorized in Article 3 of The Code of Alabama 1975 Title 41 Chapter 16 Section 50
- **“Contract” and “Resulting Contract”** are used interchangeably and are defined as the official agreement and contract award resulting from the Successful Offerer’s response to this Request for Proposal.
- **"Cross-connect"** Physical cables that connect two different networks within a data center providing services such as dark fiber, wavelength, MPLS, or other point-to-point services are available with a single cross connect.
- **“Contractor”, “Vendor” or “Offerer”** is defined as a person, company, or corporation with the capability in all respects to perform fully the contract requirements and with the integrity and reliability ensuring good faith performance.
- **"Demilitarized Zone" or "DMZ"** - A physical or logical sub-network that contains and exposes an organization's external-facing services to an un-trusted network, usually a larger network such as the Internet.
- **"FCC"** - Federal Communications Commission
- **“Fiscal Year”** when used herein is defined as the twelve (12) calendar months beginning October 1 of each year and ending on September 30 of the following year.
- **"Governing Law"** The contract and all of the rights and obligations of the parties hereto will be construed, interpreted and applied in accordance with, governed by and enforced under the laws of the State of Alabama.
- **"Local Area Network" or "LAN"** - A network spanning a small area, usually within the confines of a single facility.
- **"Multi-Protocol Label Switching" or "MPLS"** - a mechanism for routing traffic within a telecommunications network, as data travels from one network node to the next.
- **"Network Access Control" or "NAC"** A platform capable of authenticating, authorizing, and accounting for each user and device that attempts connection to the attached network or networks.

- "**Network Realization**" The stage of network planning and design following network synthesis when the network architect tests the flow of data through the network and adjusts the physical circuit plan to produce a more cost-effective and reliable network.
- "**Network Synthesis**" The stage of network planning and design following topological design when the network architect decides how to route the information through the network components.
- "**Offer**" or "**Proposal**" are defined as the Offeror's response to this Request for Proposal. The term "Offeror" is defined as the individual or entity submitting a Proposal.
- "**Offerer**" is defined as a person, company, or corporation with the capability in all respects to perform fully the contract requirements and with the integrity and reliability ensuring good faith performance.
- "**Organization**" The entity issuing the RFP, being Alabama Agricultural and Mechanical University hereby known as "Alabama A&M University", or as "AAMU" and located at 4900 Meridian Street North in Huntsville, Alabama 35811
- "**Price**" The amount that the organization will deliver to the vendor/bidder for the product or service described in the RFP.
- "**Purchasing Agency**" is defined as Alabama A&M University, Division of Purchases & Stores, 4900 Meridian Street N, Huntsville, AL 35811.
- "**Purchasing Official**" is defined as Alabama A&M University's designated contracting representative. For this RFP it is the Chief Information Officer.
- "**Request for Proposal**" or "**RFP**" - The request for proposal issued to solicit bids for the product or service described herein as is required in Article 3 of The Code of Alabama 1975 Title 41 Chapter 16 Section 54
- "**Requester**" shall mean the Alabama Agricultural and Mechanical University Information Technology Services Department
- "**Services**" shall mean Bulk Internet Services provided by the Offerer.
- "**System**" shall mean a system of fiber optic cable or lines, and/or other types of cable lines, and/or wired or wireless delivery system located on the Premises and used for the provision of Services.
- "**Term**" shall mean the period of effectiveness of this Agreement as set forth herein.
- "**Topological Design**" The stage of network planning and design when the network architect decides where to place network components and how to connect them.
- "**Unit**" shall mean a residential condominium or apartment dwelling unit at the Premises.
- "**Video Gaming Network**" A high-speed, low latency physical or logical sub-network that is used primarily for the purposes of online video gaming / competition that reduces lag and jitter experienced on traditional enterprise or residential networks.
- "**Wide Area Network**" or "**WAN**" - A network spanning a large area, usually linking servers across metropolitan, regional, national or international boundaries through leased telecommunications lines.

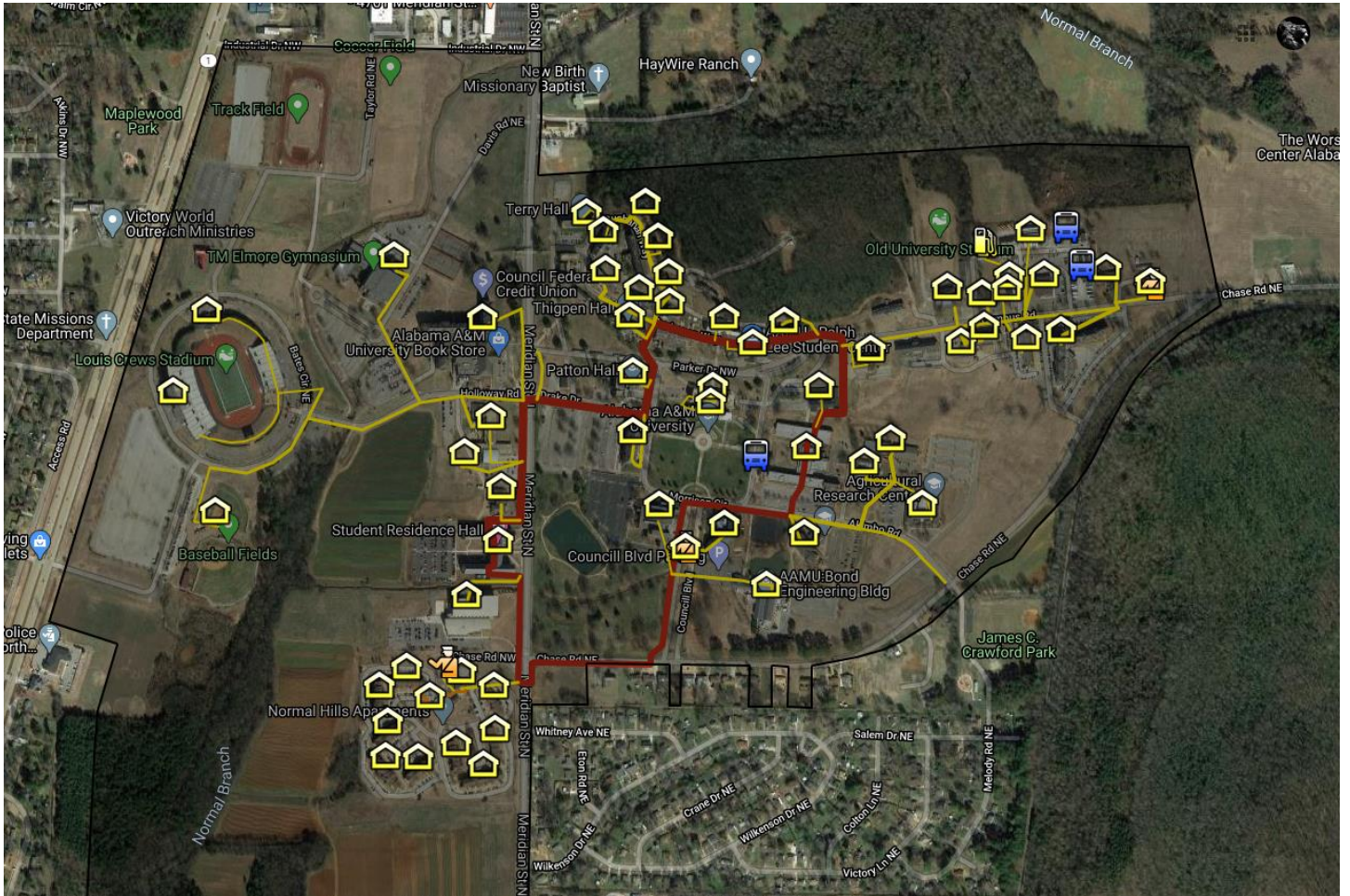
Appendix B
AAMU – ResNET Locations

BLDG #	ABBR	Building Name	Street	City	State	Zip
80	NHSA	Normal Hills Student Apartments	115 Chase Rd NW	Huntsville	AL	35811
28	NRH	New Residence Hall	4101 Meridian St NW	Huntsville	AL	35811
26	FLLC	Foster Living Learning Complex	460 Buchanan Way NE	Huntsville	AL	35811
63	KLLC	Knight Living Learning Complex	110 Holloway Rd NE	Huntsville	AL	35811
57	TRY	Terry Residence Hall	326 Buchanan Way NE	Huntsville	AL	35811
44	PRH	Palmer Residence Hall	325 Buchanan Way NE	Huntsville	AL	35811
58	TGPN	Thigpen Residence Hall	344 Buchanan Way NE	Huntsville	AL	35811
34	HRH	Hopkins Residence Hall	410 Buchanan Way NE	Huntsville	AL	35811
42	MRH	Morris Residence Hall	440 Buchanan Way NE	Huntsville	AL	35811
56	SRH	Stephens Residence Hall	450 Buchanan Way NE	Huntsville	AL	35811
38	RLUC	Ralph Lee University Center	360 Buchanan Way NE	Huntsville	AL	35811
98	HWC	Health & Wellness Center	4011 Meridian St NW	Huntsville	AL	35811
33	HCB	Honors Center Building	316 Buchanan Way NE	Huntsville	AL	35811
67	QUAD	The Quad (Outdoor WiFi)	4235 Akimbo Rd	Huntsville	AL	35811
128	CIH-128	Confucius Institute House	128 Chase Rd	Huntsville	AL	35811
136	CIH-136	Confucius Institute House	136 Chase Rd	Huntsville	AL	35811

Appendix C
AAMU – CCN Locations

BLDG #	ABBR	Building Name	Street	City	State	Zip
12	CCX	Carver Complex	4240 Morrison Cir NE	Huntsville	AL	35811
43	MFAB	Morrison Fine Arts Building	4119 Council Blvd	Huntsville	AL	35811
8	SOB	School of Business	4230 Morrison Cir NE	Huntsville	AL	35811
23	SOE	A. J. Bond Hall (School of Engineering)	4000 Bond Dr NE	Huntsville	AL	35811
19	DEXT	Dawson Extension Building	306 Akimbo Rd NE	Huntsville	AL	35811
24	ARC	Agricultural Research Center Building	329 Akimbo Rd NE	Huntsville	AL	35811
45	TGPB	T.R. Parker Buildings	321 Akimbo Rd NE	Huntsville	AL	35811
30	GH	Green Houses	315 Akimbo Rd NE	Huntsville	AL	35811
11	CSH	Carter Science Hall	130 Parker Dr. NE	Huntsville	AL	35811
15	VMC	V. Murray Chambers Science Building	4235 Morrison Cir NW	Huntsville	AL	35811
21	DMLRC	Drake Memorial Learning Resource Center	115 Drake Dr. NE	Huntsville	AL	35811
39	MVB	McCalep Vocational Building	375 Buchanan Way NE	Huntsville	AL	35811
4	BGH	Bibb Graves Hall	355 Buchanan Way NE	Huntsville	AL	35811
20	DDH	Drake Hall	335 Buchanan Way NE	Huntsville	AL	35811
17	WHCH	W. H. Councill Hall	315 Buchanan Way NE	Huntsville	AL	35811
1	CAMB	Crump Agricultural Mechanics Building	4103 Meridian St NW	Huntsville	AL	35811
50	PSB	Poultry Science Building	465 Buchanan Way NE	Huntsville	AL	35811
52	IWC	Dora's House	4105 Meridian St NW	Huntsville	AL	35811
18	LCS	Louis Crews Stadium	200 Bates Cir NW	Huntsville	AL	35811
73	HFH	Hobson Field House	201 Bates Cir NW	Huntsville	AL	35811
22	TMEG	T. M. Elmore Gym	4225 Davis Dr. NW	Huntsville	AL	35811
27	FLG	Frank Lewis Gym	425 Buchanan Way NE	Huntsville	AL	35811
16	CTC	Councill Training Center (Athletics / ROTC)	4107 Meridian ST NW	Huntsville	AL	35811
65	BBSB	Baseball/Softball Fields	190 Bates Cir NW	Huntsville	AL	35811
25	FIC	Foster Irradiation Center	4250 Morrison Cir NE	Huntsville	AL	35811
9	CL	Carnegie Library	345 Buchanan Way NE	Huntsville	AL	35811
40	MCCB	McCormick Building	308 Buchanan Way NE	Huntsville	AL	35811
64	SBA	State Black Archives (Wilson)	300 Buchanan Way NE	Huntsville	AL	35811
47	PHAB	Patton Hall Administration Building	4210 Morrison Cir NE	Huntsville	AL	35811
53	USB	University Services Building	453 Buchanan Way NE	Huntsville	AL	35811
37	EKMF	Eugene Kendrick Maintenance Facility	445 Buchanan Way NE	Huntsville	AL	35811
14	CCU	Councill Credit Union	441 Buchanan Way NE	Huntsville	AL	35811
54	HR	Human Resources	444 Buchanan Way NE	Huntsville	AL	35811
10	ARW	Aramark Receiving Warehouse	430 Buchanan Way NE	Huntsville	AL	35811
36	HES	Hester House	440 Buchanan Way NE	Huntsville	AL	35811
		BTS Fuel Station	443 Buchanan Way NE	Huntsville	AL	35811
		NHSA Guard Shack	114 Chase Rd	Huntsville	AL	35811
		Campus Rd. Guard Shack	467 Buchanan Way NE	Huntsville	AL	35811
		Councill Blvd Guard shack	4118 Councill Blvd	Huntsville	AL	35811
		Alumni House	116 Chase Rd	Huntsville	AL	35811
		Bates Rd Camera		Huntsville	AL	35811
		Parker Rd Camera		Huntsville	AL	35811

Appendix D Campus Fiber Ring



Appendix E
AAMU Structured Cabling Standard

See attached document entitled "AAMU Structured Cabling Standard.pdf"