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MEETING MINUTES

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ECU Comprehensive Master Plan	**April 7, 2009**	**11:00-12:30**	**01**
PROJECT NAME	DATE	TIME	MEETING NO.
ECU – Mendenhall #254	**-**		
MEETING LOCATION	PROJECT NUMBER		
Brian Mitchell	**Kick Off meeting with Infrastructure Group**		
PREPARED BY	PURPOSE OF MEETING		

PARTICIPANT	COMPANY / DEPARTMENT	PHONE	E-MAIL
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Neal Kessler	JJR	734.669.2761	Neal.Kessler@jjr-us.com
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DISTRIBUTION

All Participants

GENERAL:

The purpose of this meeting was to introduce the infrastructure team for the comprehensive master plan, clarify the scope of work, define how the infrastructure master plan fits into the overall master plan and identify the items RMF Engineering need to get started on their portion of data gathering and existing conditions assessment.

ECU's goal for the infrastructure master plan group is to develop and integrate a facility master plan in conjunction with the land use master plan in an effort to define what utilities will need to be accounted for during campus growth.

RMF briefly described the utilities involved in the master plan. They involve chilled water, steam, domestic water, storm water, sanitary sewer, natural gas, electrical, and telecom/data.

RMF expressed their goal was to provide ECU was to develop a useful working document to better assist facilities with expansion, repair, and maintenance in the future.

ISES is the consultant responsible for assessing the mechanical spaces and efficiencies of the buildings. The data and reporting gathered from the building assessment should be integrated in RMF's load analysis report.

The meeting format was discussed. Smith Group currently is planning on 7 formal meetings over the 12-18 month project timeframe. RMF and ECU facilities plan to meet at least monthly to gather data and review their findings. Meetings may be more frequent during the initial data gathering phase of the master plan.

The point of contact for ECU will be Paul Carlson. When coordinating with ECU, RMF to clarify which campus they are referring to since campus is divided between Main Campus and Health Sciences Campus.

A utility master plan performed by Newcomb & Boyd completed in 2001. ECU will deliver a copy to RMF for their use.

ECU prefers the utilities deficiencies be packaged with the buildings they impact where possible.

ECU is at design development submission for the upfit of unfinished space at the Health Science Facility.

Definitions of each campus were clarified. ECU envisions one campus with no division which will be defined in the comprehensive master plan. For the discussion of the meeting and future meetings, there is a Main Campus, Health Sciences Campus, and West Research Campus.

RMF requested a master building list complete with building names, numbers, size, year built, occupancy type, and connectivity to the central utility loops (CHW and Steam). ECU will provide a list and as much of the information as possible. RMF will conduct field work to fill in any missing information.

Leased properties will not be included in the comprehensive building list. ECU currently has leased property spread over the greater Greenville area. ISES will not be surveying leased space. Building loads for leased space near campus will need to be reviewed and included in the load analysis to determine if it is feasible for ECU to pull those spaces back onto the campus distribution network.

The direction of campus expansion has not yet been determined. The preferred type of utility distribution for new expansion is a walkable utility tunnel (12' x 12') similar to the tunnel installed on Health Sciences Campus.

Data gathering was discussed and the following were determined:

- ECU shall have a single point of contact for gathering data
- Data shall be inventoried and tagged in an effort to track what has been distributed to whom
- A single share point will be developed for data sharing across consultant groups.
- Share point website will be password protected
- ECU will develop online in-house site for data organization. Once data is organized, it will be posted to the share point website for retrieval.

CHILLED WATER:

Chilled water was discussed. The following items were discussed:

- Drawings for the central plant and distribution are available. They are in various formats including CAD, Tiff, pdf, and hardcopy
- Loads, pipe size, pipe routing available in various formats.

- Load analysis has not been performed on campus.

A discussion on the loads for the research facility was discussed. ECU facilities personnel believed anticipated loads may be double the recorded loads on the building. It is noted that caution should be taken when performing load analysis across campus as buildings like the research facility may not be fully built out at this time.

Chilled water loads are currently calculated through trend data. Stand alone buildings have been difficult to measure accurately.

The locations of the chilled water facilities were discussed:

- Main Campus chilled water generation is located in the Science & Technology building. The current maximum capacity is 9,000 tons
- Athletic facilities are served by a separate plant located near the athletic complex.
- Health Sciences Campus has its own utility plant to generate chilled water. The plant is capable of handling all utilities for the campus including steam, domestic water, and fire water.

Chilled water controls were discussed:

- Invensys controls handles chilled water control in each building
- Siemens controls and Johnson controls are utilized mainly in the central plants with limited use in buildings.

Prior to the installation of the central chilled water plant, there were 23 unitary systems supplying cooling to campus buildings. Since installation of the plant, between 9 & 11 unitary units have been removed and their systems connected to the central chilled water loop.

All chillers are on Invensys controls systems for monitoring.

The driving forces for adding buildings to the chilled water loop are geography and funding. If a building is near the loop and funds are available, it is connected to the central loop. New buildings are connected to the central loop.

The chilled water loop on the southeast portion of main campus is mostly complete. The northeast loop has not been installed at this time.

ECU has not had any hydraulic modeling done on their campus for chilled water.

The chilled water plant operates on a variable primary pumping system. Booster pumps are installed in each building connected to the chilled water loop but have not been used to boost CHW pressure within the building yet.

RMF clarified scope of equipment inventory for chilled water and steam. RMF will inventory all equipment that connects or will connect to the central distribution system.

STEAM:

The steam master plan was completed April 2007 by AEI. RMF has a copy of this master plan for their reference. Some areas for repair were not included in the master plan and will need to be identified by ECU. The remainder of the master plan is comprehensive and will be integrated in the steam portion of this infrastructure master plan.

The main tunnel on main campus contains asbestos. Radial feeds of steam piping are direct buried, drainable/dryable systems.

DOMESTIC WATER:

The Greenville Utility Commission (GUC) supplies natural gas, domestic water, and electricity to campus. Fiber optics are leased through GUC.

Domestic water runs through campus in a grid and terminates at each building with a meter. GUC owns the piping up to the meter and ECU owns from the meter into and through the building. The domestic water site plans are least developed due to the age of the system. Field work with infrastructure personnel will be required to properly verify and locate the water piping. Health Sciences campus domestic water feeds the central plant where booster pumps supply water to the campus.

The facilities department is currently researching the use of cooling tower blow down and storage for irrigation. Health Sciences Campus uses cooling coil condensate for make up water in an effort to increase campus sustainability.

ECU mentioned that Health Sciences Campus has water conservation fixtures in all their buildings. All new buildings on campus are supplied with water saving fixtures. RMF recommended ECU ask ISES to look for water conservation measures in their building assessment for water sustainability.

ECU has compiled water bills for total campus usage. RMF requested copies of these bills and usage records to help develop a sustainability plan for domestic water.

Fire protection is handled at each building. Water pressure on campus is 55 psig however the design basis is 25 psig for new buildings.

STORM WATER / SANITARY SEWER:

Sanitary sewer and storm water are well documented. ECU will provide site plans for these utilities.

Storm water outfalls to Green Mill Run and Tar Rivers. ECU does not have any storm water retention on campus.

Sustainability for storm water will be important in future designs. ECU would like to implement best management practices for storm water management and eventually be fully sustainable.

NATURAL GAS:

Natural gas site plans should be fairly accurate. ECU will provide RMF with site plans for natural gas piping locations.

RMF asked ECU if an existing natural gas site plan would be necessary since GUC has well documented plans. ECU would like a composite existing site plan of natural gas for their use in estimating cost for relocation and sizing of piping for new projects.

ELECTRICAL:

Electrical power monitoring was discussed. Currently, ECU has Square D Power Logic installed on the Health Sciences Campus to monitor the electrical system and power usage.

An electrical master plan was developed by Booth & Associates in 2001. ECU will provide RMF with a copy of this master plan.

Two of the three phases outlined in the electrical master plan have been completed. The third phase to install a 3rd point of deliver (POD) has been designed to increase redundancy and some capacity. It has not been installed due funding.

GUC has provided peak shaving generators. Should ECU be required to utilize the generators for peak shaving, GUC charges them for the usage. In emergency operations, ECU can use the generators to supply emergency power to campus.

Electrical distribution on campus is 12.47 KV. Nearly 90% of electrical service is supplied to the campus owned electrical grid. The remaining power is run through the GUC grid to power meters for buildings located off campus.

TELECOM/DATA:

Telecom and data are no longer separate utilities. ECU utilizes a VOIP fiber optic network allowing for removal of the telephone switch installed in 1995.

The telecom/data scope was clarified and documented as follows:

- Establish current capacity
- Address increases to demand with campus growth and expansion
- Infrastructure analysis should determine where new hub be located with land use development
- Main campus has adequate capacity to serve new building construction

Telecom/data will need a corridor for expansion west of Contanche Rd. and a hub for service. ECU wants to verify current capacity to confirm future capacities will be met.

Telecom/data ductbank are currently 4x4 4" conduits.

At the conclusion of the meeting the following follow up items were discussed:

ITEM	DESCRIPTION	DUE DATE	ACTION BY	STATUS
1-1	Smithgroup/JJR to provide RMF with overall campus site plan for utility site planning	05/01/2009	Kessler	open
1-2	ECU to furnish RMF with a copy of Newcomb & Boyd 2001 Utility Master Plan	04/15/2009	Carlson	open
1-3	ECU to furnish RMF with a comprehensive building list complete with name, size, occupancy type, and year built	04/22/2009	Carlson	open
1-4	ECU to develop in-house website for data organization	04/10/2009	Hudson	open
1-5	ECU to provide site plans for chilled water	04/22/2009	Carlson	open
1-6	ECU to provide site plans for storm water & sanitary sewer	04/29/2009	Carlson	open
1-7	ECU to provide site plans for natural gas	04/29/2009	Carlson	open
1-8	ECU to furnish RMF with compiled domestic water bills/usage.	04/15/2009	Carlson	open
1-9	ECU to furnish RMF with a copy of Booth & Associates 2001 Electrical Master Plan	04/15/2009	Carlson	open
1-10	ECU to provide RMF with electrical & telecom site plans	04/29/2009	Carlson	open

IF THIS REPORT DOES NOT AGREE WITH YOUR RECORDS OR UNDERSTANDING OF THIS MEETING, OR IF THERE ARE ANY QUESTIONS, PLEASE ADVISE THE WRITER IMMEDIATELY IN WRITING; OTHERWISE WE WILL ASSUME THE COMMENTS TO BE CORRECT.

SUBMITTED BY: Brian P. Mitchell, RMF Engineering, Inc.