

BOULDER PUBLIC LIBRARY

UPDATED FACILITIES SUSTAINABILITY STUDY | MAIN BUILDING



boulderlibrary.org

studiotrope
design collective
12|02|15

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I) INTRODUCTION EXECUTIVE SUMMARY

In 2009, the Boulder Public Library completed the 'Boulder Public Library Facilities Sustainability Study' (Facilities Study). The Facilities Study was intended to guide future decisions related to the library service model, facility management, facility renovation and development, and the allocation of available financial resources. In 2015, over \$4.8 million in Capital Improvement Bond funds were used to renovate the Main Library. These renovations addressed many of the recommendations in the Facilities Study for the Main Library.

This report outlines the 2013 Capital Improvement Bond Scope and serves as an update to the 2009 Facilities Sustainability Study for the Main Library, by Humphries Poli and Group 3 Planners. As well as identifying 4 categories of recommended additional scope.

- Items to be addressed as promptly as possible, including signage, furniture and shelving
- Building/Improvements that were addressed separately by the City of Boulder
- Operational improvements to be provided by library staff
- Items that should be addressed as applicable in the future

II) BACKGROUND

2013 CAPITAL IMPROVEMENT BOND SCOPE

The Main Library Renovation had the following scope of work:

2013 capital improvement bond-funded renovations:

- remodeling and potential relocation of the **childrens** library
- development of an expanded and upgraded **teens** space
- improved access and **browsing** areas for **fiction**, movies and music collections through renovation of the first floor of the 1992 wing (as required with code updates)

2011 capital improvement program improvements:

- replacement of outdated **electrical & data distribution** systems
- repair or replacement of the **clerestory window** systems
- **ADA accessibility** improvements (as required with code updates)
- replacement of worn **carpeting**

project components funded by library Facilities Renovation & Replacement (FR&R):

- provide facilities and space in which **cafe services** can be offered
- update to 2009 facilities sustainability study: reinventing the library
"future proofing"

In addition to the above listed scope, the Construction Documents included several additional scope items that were identified in either the 2009 Facilities Sustainability Study (provided by Group 3 Planners and Humphries Poli Architects, excerpts attached) or Community Meetings during the project design. All of the additive alternates were funded by the City of Boulder/ Boulder Public Library and integrated into the renovation.

III) UPDATED FACILITIES SUSTAINABILITY STUDY SUMMARY

This Updated Facilities Sustainability Study recommends improvements, supplemental to the 2013 Main Library Renovation.

The recommendations were either identified in the 2009 Facilities Sustainability Study provided by Humphries Poli and Group 3 Planners or identified during the 2013 renovation project designed by studiotrope Design Collective.

It is strongly suggested that the Library address the furniture, signage and built in shelving items as promptly as possible to take full advantage of the recently completed renovation.

The remaining recommendations however, may be addressed as furniture is replaced, collection sizes evolve and the functionality of the Main Library changes.

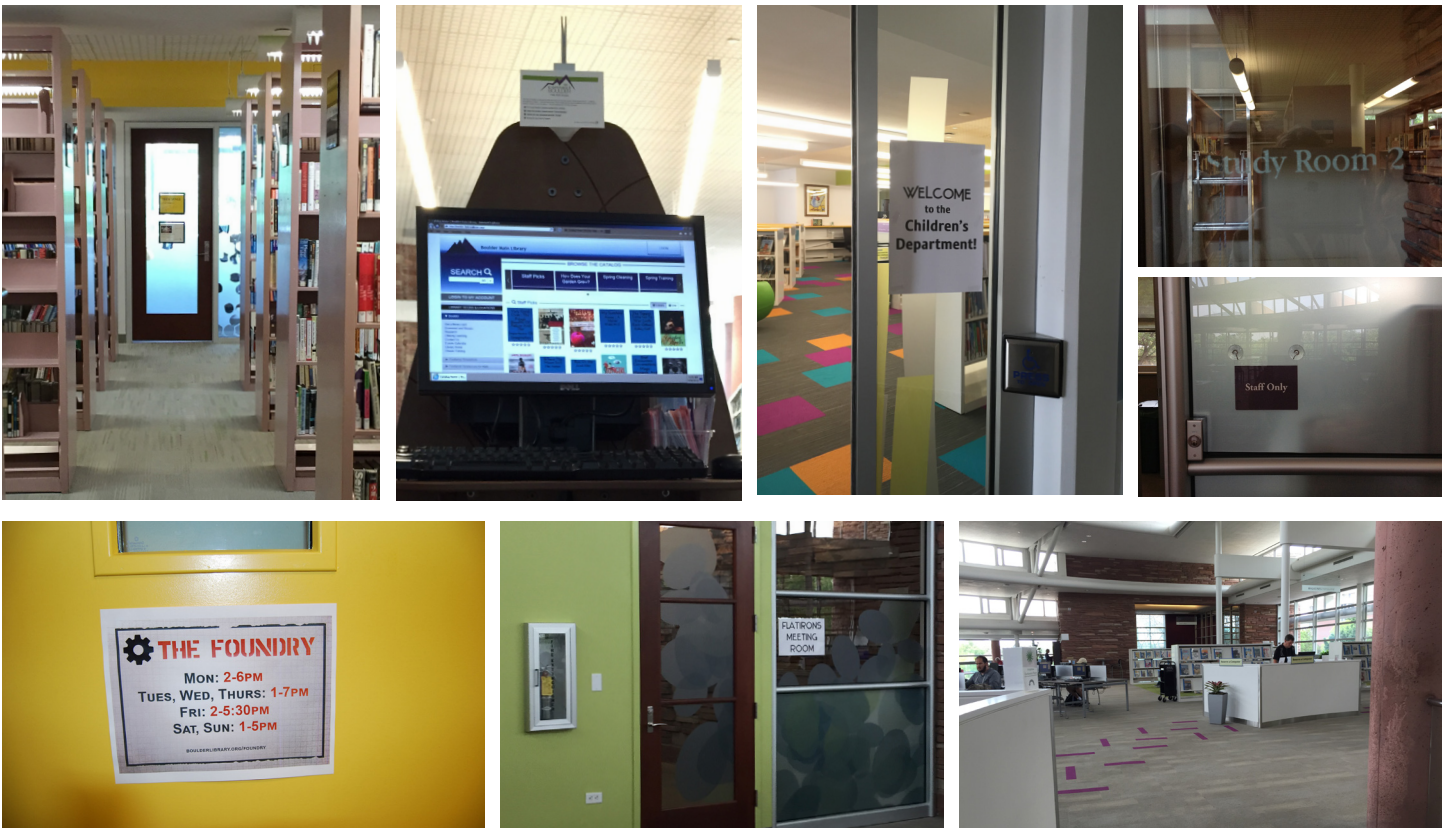
III) UPDATED FACILITIES SUSTAINABILITY STUDY ITEMS TO BE ADDRESSED AS PROMPTLY AS POSSIBLE

SIGNAGE

CONCERN: TEMPORARY AND LEGACY SIGNAGE
As each construction phase (4 in total) was completed, temporary signage was installed to identify newly named destinations and provide information. Compounding this is legacy signage that fell outside the renovation scope. (see below)

RECOMMENDATION: SIGNAGE AUDIT AND GUIDELINES
Now that all phases of the renovation are complete, and both staff and community have become acquainted with the enhanced building. A signage audit is recommended to evaluate what permanent signage is necessary and incorporate it into the newly established wayfinding language. This signage audit may address the Main Library as a standalone facility, or be completed system wide to address signage issues at all library facilities.

In either case, it is recommended that a BPL representative work with a graphic designer to conduct a Signage Audit and establish Signage Guidelines.



III) UPDATED FACILITIES SUSTAINABILITY STUDY ITEMS TO BE ADDRESSED AS PROMPTLY AS POSSIBLE

FURNISHINGS AND SHELVING

CONCERN: COLLECTIONS NEAR THE FLOOR
The lower shelving at Fiction and New Fiction on Level 1 of the south wing is proving problematic for physically challenged patrons.

RECOMMENDATION: ENHANCED BROWSING
Furniture that allows people to sit and browse the lower shelves in lieu of bending over or kneeling, would enhance browsing the materials on shelving near the floor.

It is also recommended that 2-5 stools be provided at the built-in book shelves along the ramp. These stools should have the following characteristics: a low seat height (optimal height to be determined); are backless, without wheels and light weight; and optional handles or space to place books.

It is also recommended that the built-in book shelves along the ramp, be tilted so the front face is 2 pegs higher than the back. This, along with installing a 6.5" deep shim, will push the books towards the front of shelves and enhance visibility.

CONCERN: LIBRARY COMPUTER CATALOG ACCOMMODATION FOR ABLE-BODIED USERS

RECOMMENDATION: Provide a stool with the following characteristics at accessible library computer catalog in Media Section: a 24" seat height, no back or wheels, light weight, and possibly metal (to match legs of adjacent tables & chairs).

Area to have additional stools.



Slope shelf to allow books to slope upward.



Move books to front face of shelf.



III) UPDATED FACILITIES SUSTAINABILITY STUDY ITEMS TO BE ADDRESSED AS PROMPTLY AS POSSIBLE

LIGHTING UPGRADES FOR ENTRY CONOID

CONCERN: The lighting in this area is accomplished through the use of either floor mounted or under grate mounted uplights, in addition to uplights mounted on the ledge between the rock wall and the windows. The indirect lighting scheme does not work well in this space since most of the lighting is reflected against either surfaces with a low reflectance (rock walls) or surfaces with a very high transmittance (windows).

RECOMMENDATION: Increasing the lighting in this entry point will make the library a much more inviting space to the public at night. The addition of some type of overhead lighting, which provides downlighting in the space, is recommended. The use of pendant mounted decorative cylinder type lights would be very functional in this space. Another option would be the use of pendant mounted glowing “sticks” of light, which play off of the structure in the rotunda.

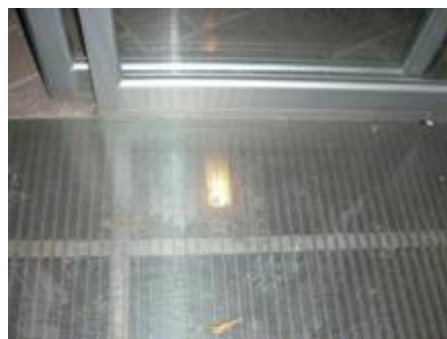
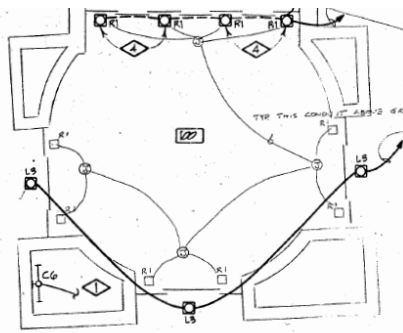
11.2.5 SUSTAINABILITY ASSESSMENT; LIGHTING (PP 25, 26)

The 1992 wing of the library has excellent daylighting, but multiple focus groups noted that it is too dim in evening and winter conditions. A sustainability audit performed in 2007 suggested relamping fixtures with high-efficiency T8 lamps. These lamps, in addition to being more efficient, give out 5% more light than the current lamps.

Additionally, the sustainability audit stated that there is no mechanism installed to automatically dim the lamps when daylighting conditions make them unnecessary. Installation of daylight sensors in the reference room would allow easy energy savings for minimal investment. The concurrent installation of dimmable ballasts would allow continuous variation of light levels to balance daylighting conditions.

The stack lighting in the 1974 wing uses motion sensors to light a range of stacks when someone enters it. Other stack areas rely on manually-activated timer lights. Although these are efficient in purely technical terms, focus groups reported a strong impression of the stacks as a dark, potentially unsafe place. The stack lighting thus constitutes an obstacle to the library’s public service mission.

Daylighting is relatively poor in the 1974 wing. More windows at the perimeter could improve daylighting and offer views to the creek. Tubular skylights or Sundoliers could be considered at the second floor. The upper floor of the 1961 wing offers no windows to its enclosed office space. The structural system should be evaluated for its potential to accept new windows, which would greatly increase the potential of the space while also reducing energy use through daylighting.



III) UPDATED FACILITIES SUSTAINABILITY STUDY

ITEMS TO BE ADDRESSED AS APPLICABLE IN THE FUTURE:

As furniture is replaced, collection sizes evolve and the functionality of the main library changes

ADD RESTROOMS for staff in basement (2014 sDC recommendation per staff in reach study)

RENOVATE PUBLIC RESTROOMS including finishes, lighting, plumbing fixtures (2014 sDC recommendation per City of Boulder ADA and Energy goals)

As **CHAIRS** are replaced consider chairs **WITHOUT CASTERS**

Consider removing 3 high shelving units at level 1 Fiction and replacing with the same mobile material displays found elsewhere in the library (jelly drops) for **HIGHER SHELF HEIGHT**. Shelving ranges could be relocated to the second level, replacing the existing shelving.

Provide **LIGHTING UPGRADES** at the Main Stair to Second Floor and Second Floor as outlined in the appendix.

Jelly Drops



Existing chairs with casters



III) UPDATED FACILITIES SUSTAINABILITY STUDY

BUILDING IMPROVEMENTS THAT WERE ADDRESSED SEPARATELY BY THE CITY OF BOULDER:

NOTE: page numbers in () reference the 2009 Facilities Sustainability Study

COMPLETED ITEMS INCLUDE;

AUTOMATED HANDLING UNIT (II.2.4 Usability Assessment p25);

Security: addition of **CAMERAS** (II.2.4 Usability Assessment p17);

ROOF/WINDOW REPLACEMENT to address leaks;

Relocate **WIRELESS** access points;

POWER GENERATION (II.2.5 Sustainability Assessment p26).

ITEMS REMAINING TO BE ADDRESSED IN THE FUTURE;

MECHANICAL upgrades (II.2.2, 1992 Wing, 3, Systems p13);

Analyze **CODE ANALYSIS** & Compliance (II.2.3 p14);

ADA ROOM SIGNAGE for entire building to match city standards;

FLOODPLAIN CONTROL

III) UPDATED FACILITIES SUSTAINABILITY STUDY

OPERATIONAL IMPROVEMENTS IDENTIFIED IN 2009 FACILITIES SUSTAINABILITY STUDY

NOTE: page numbers in () reference the 2009 Facilities Sustainability Study

COMPLETED ITEMS INCLUDE;

Evaluate security measures for **MEDIA** (IV.5.3);

Process **MAGAZINES** for circulation (IV.5.4);

Update the **WEB SITE** (IV.5.5);

ITEMS REMAINING TO BE ADDRESSED IN THE FUTURE;

Determine **TARGET** size for facilities (IV.6);

Implement media **DISPENSERS.** (IV.5.3)

III) UPDATED FACILITIES SUSTAINABILITY STUDY

GENERAL IMPROVEMENTS IDENTIFIED IN 2009 FACILITIES SUSTAINABILITY STUDY

NOTE: page numbers in () reference the 2009 Facilities Sustainability Study

ITEMS REMAINING TO BE ADDRESSED IN THE FUTURE;

Addition of small **STUDY ROOMS** (II.2.4.7 Usability Assessment, Insufficient Meeting and Study Space p17)

Implement **GREEN ROOF** system at bridge (II.2.5 Sustainability Assessment p26)

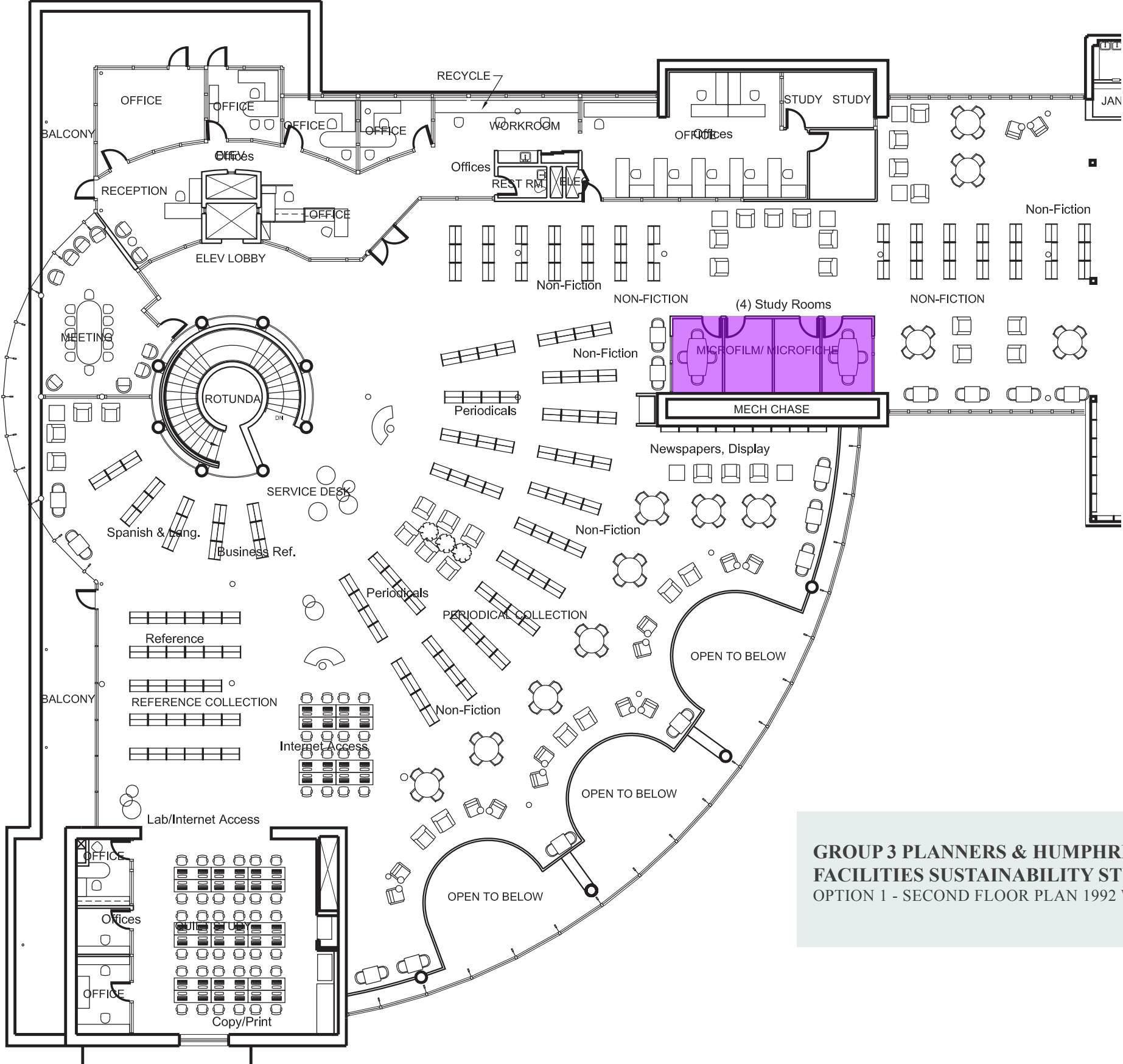
Relocate **LITERACY PROGRAM** (II.2.4 Usability Assessment p23)

Replace high shelving w/ **LOW SHELVING**; not addressed on level 2 non-fiction (II.2.4 Usability Assessment, Security p17 & IV.3 p72)

Update **LIGHTING** in **ENTRY VESTIBULE CONOID & SECOND FLOOR** (II.2.5 Sustainability Assessment p25 & appendix)

Additional **MECHANICAL** upgrades (II.2.2 Physical Condition Assessment p11-14)

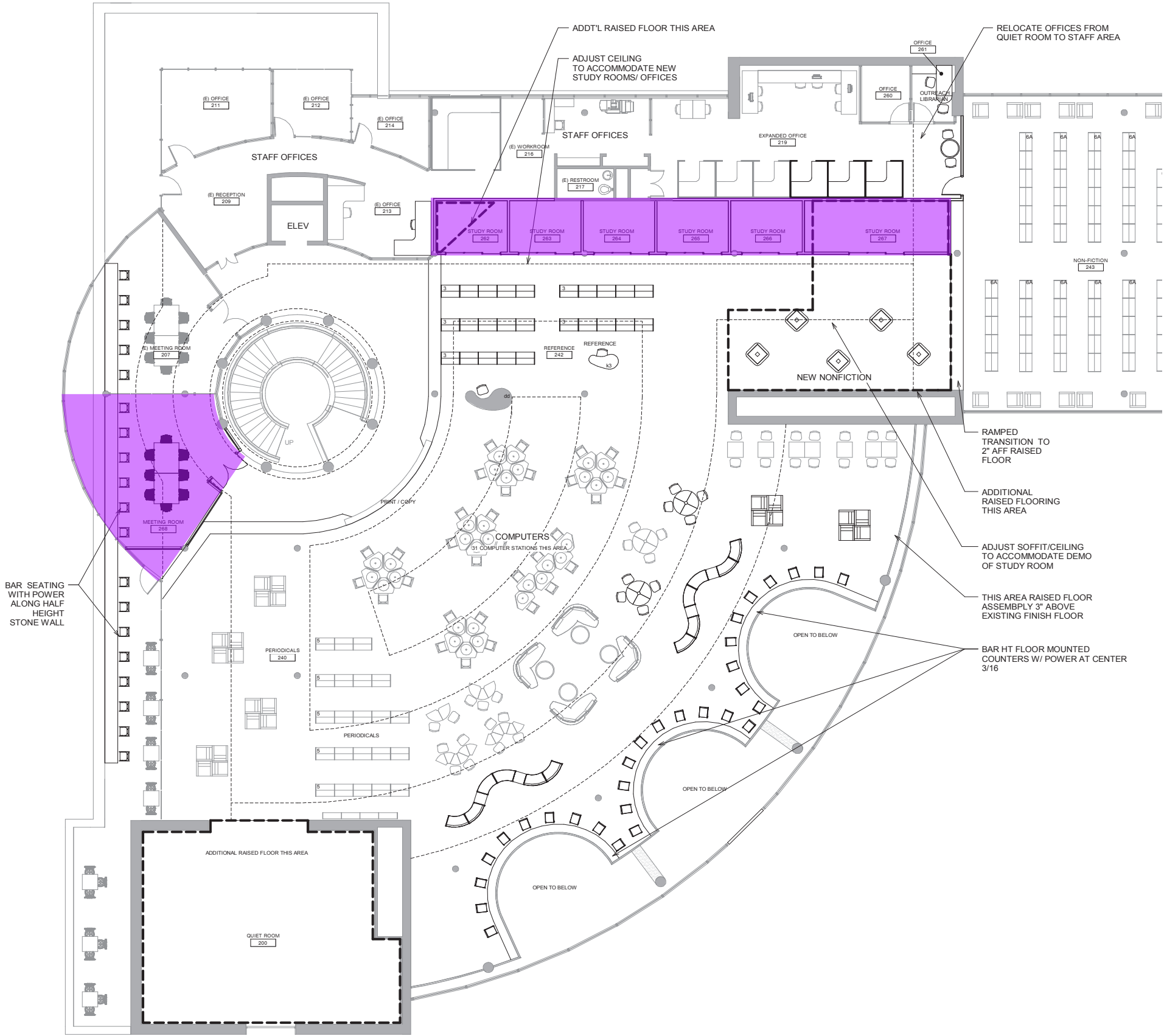
IV) APPENDIX
ADDITIONAL STUDY ROOM : LOCATION OPTION



GROUP 3 PLANNERS & HUMPHRIES POLI ARCHITECTS
FACILITIES SUSTAINABILITY STUDY 2009
OPTION 1 - SECOND FLOOR PLAN 1992 WING

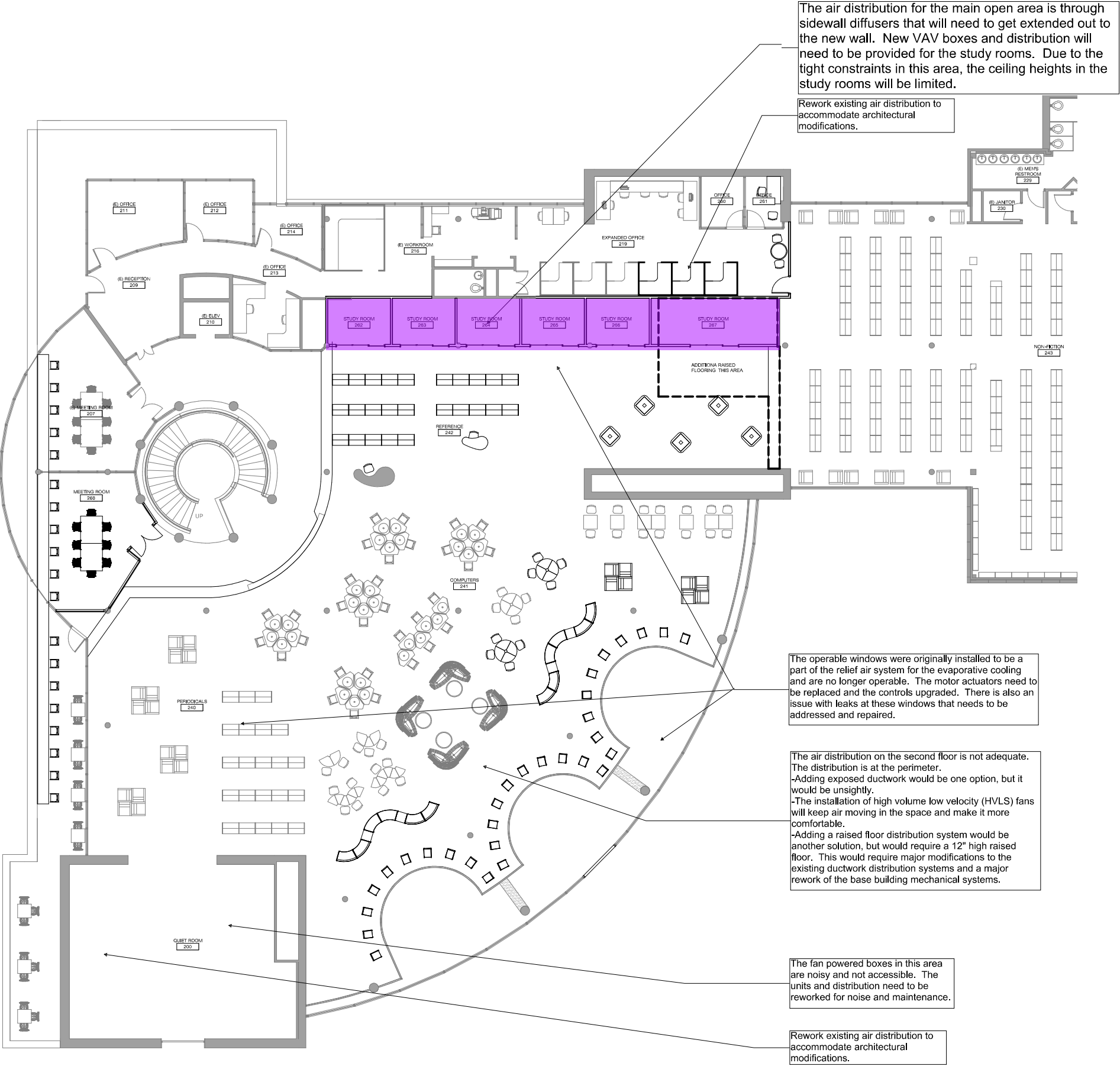
IV) APPENDIX
ADDITIONAL STUDY ROOM : LOCATION OPTION

STUDIOTROPE DESIGN COLLECTIVE FACILITIES STUDY 2013
SHEET A-182 ARCHITECTURAL FLOOR PLAN LEVEL 2



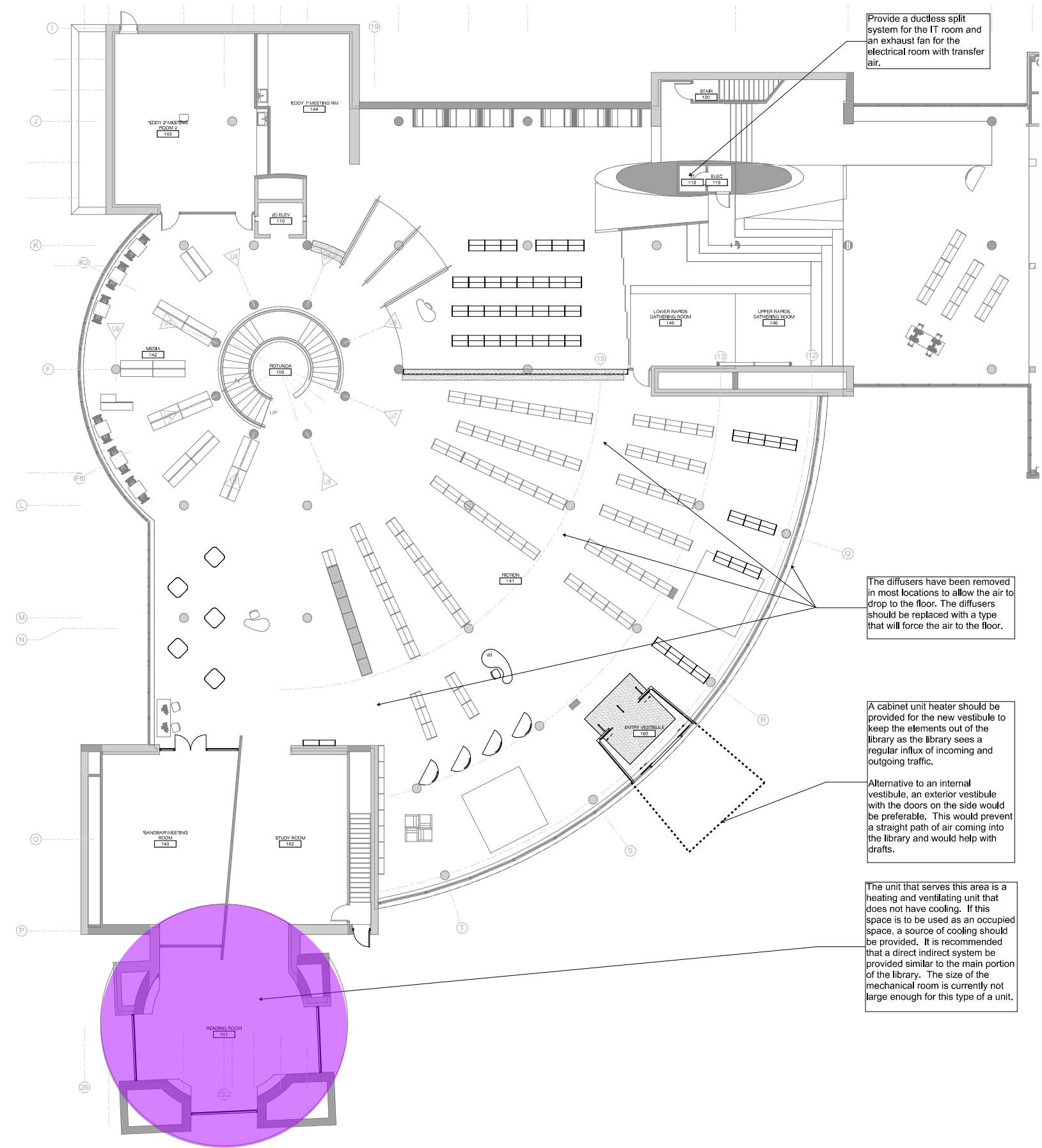
IV) APPENDIX
ADDITIONAL STUDY ROOM : MECHANICAL

STUDIOTROPE DESIGN COLLECTIVE FACILITIES STUDY 2013
SHEET M-182 MECHANICAL LEVEL 2

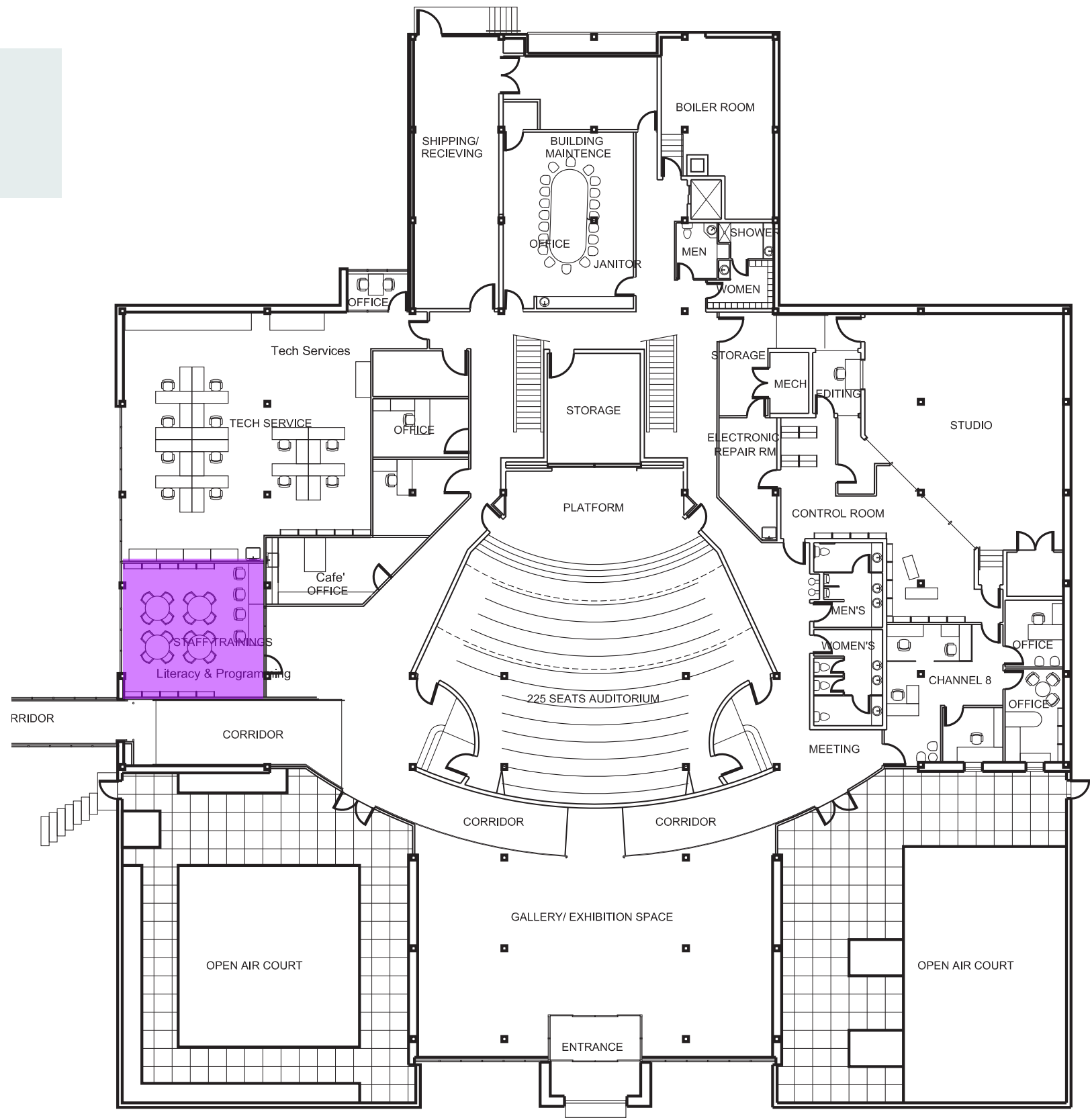


IV) APPENDIX
CONOID : MECHANICAL UPGRADES

STUDIOTROPE DESIGN COLLECTIVE FACILITIES STUDY 2013
SHEET M-181 MECHANICAL PLAN LEVEL 1



GROUP 3 PLANNERS & HUMPHRIES POLI ARCHITECTS
FACILITIES SUSTAINABILITY STUDY 2009
FIRST FLOOR PLAN 1961 WING



STUDIOTROPE DESIGN COLLECTIVE FACILITIES STUDY 2013
LIGHTING PLAN - BASEMENT



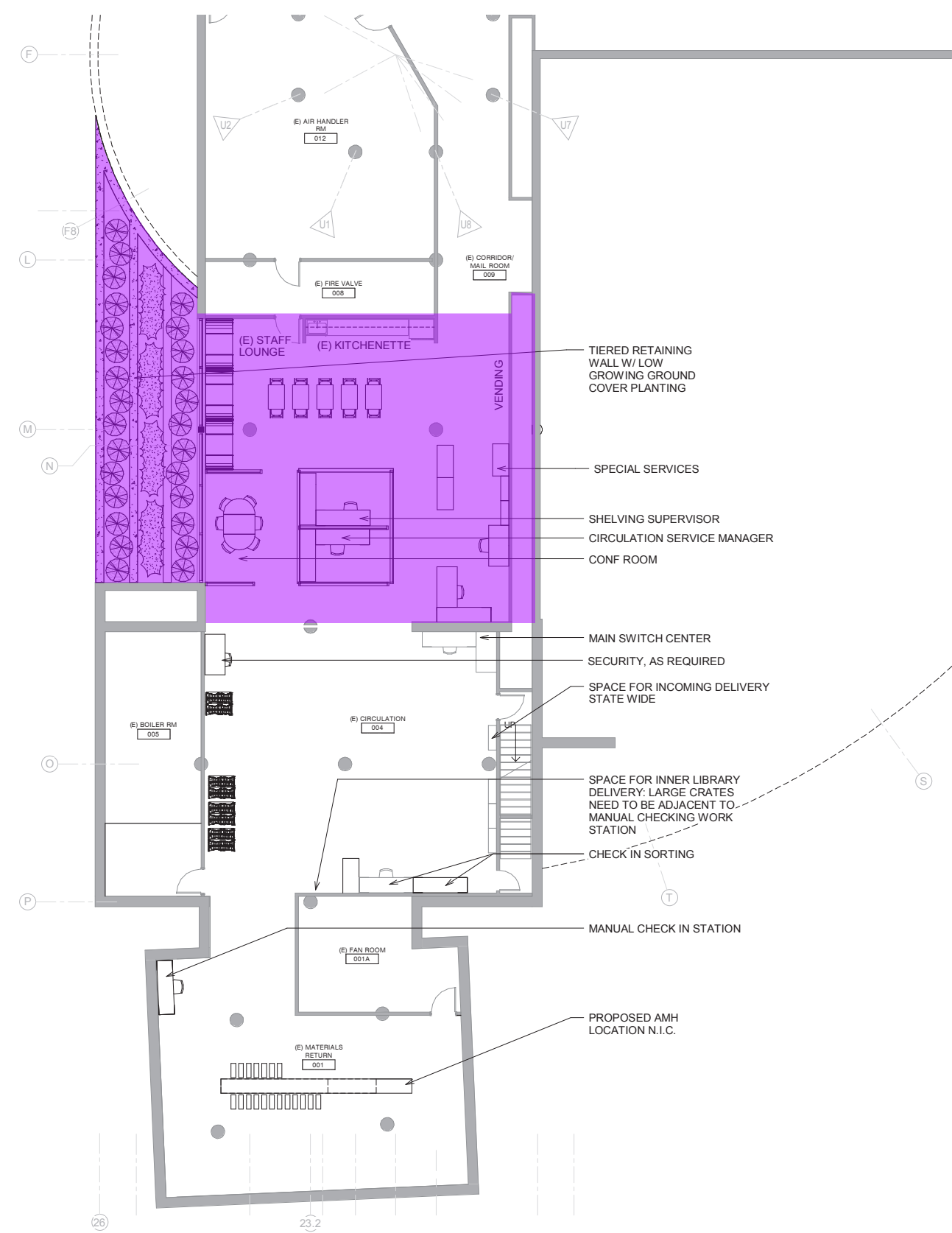
Lower Level Office Area: FEASIBILITY

Existing Conditions: The lower level is divided into office space which also houses the book sorter and back of house storage, mechanical and electrical spaces. The back of house storage, mechanical, and electrical spaces are currently illuminated with surface or pendant mounted strip lights. These lights do an adequate job of illuminating these spaces and we do not recommend replacement, unless the function of one of these spaces changes. The office spaces are illuminated with 3-lamp, T8, 2x4 recessed parabolic type luminaires. The directional nature of these luminaires in conjunction with a lower ceiling height makes this area feel dark to the users.

Recommendations: It is recommended that a one-for-one replacement of the existing parabolic type luminaires with high efficiency 2-lamp, T8, 2x4 recessed volumetric type luminaires be completed. The increased efficiency of the volumetric type of luminaire as well as optics which allow a greater amount of light on both the walls and the ceilings make the space appear both larger and brighter. This lighting change results in a power density of 0.76W/ft². This complies with the City of Boulder energy codes for a library application. The recessed volumetric troffers would be similar to Neoray 284 series.

Energy Code Implications: The new lighting does not have to comply with the requirement of 70-percent below the value defined in the 2012 IECC if we are modifying less than 50-percent of the installed lighting and the overall lighting power density is reduced. If more than 50-percent of the lighting in this space is replaced, then all new lighting, when combined with all existing lighting to remain in this area must have a power density (watts per square-foot) of less than 70-percent of the values defined in the 2012 IECC. The lighting controls within the space will also have to be brought up to the requirements of the 2012 IECC.

STUDIOTROPE DESIGN COLLECTIVE FACILITIES STUDY 2013
SHEET A-180; ARCHITECTURAL FLOOR PLAN



IV) APPENDIX

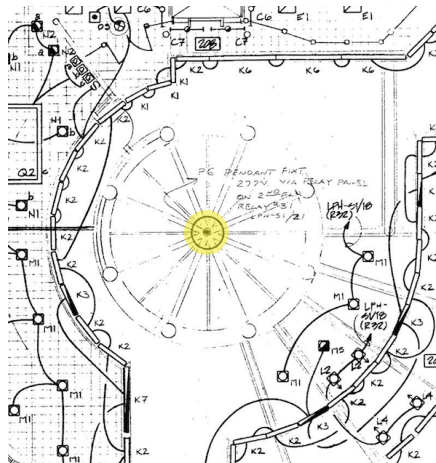
LIGHTING UPGRADES: SECOND FLOOR

MAIN STAIRS TO SECOND FLOORS

CONCERN: The stairs are not a primary area of concern for the library, however the light levels are low for such a prominent architectural feature. Additionally, replacing the existing lamps in the lone pendant is difficult and requires scaffolding to be constructed. Most of the light from this pendant is directed towards the glass ceiling above the stairs, which does not reflect much light back into the space.

RECOMMENDATION: One option is to install an LED illuminated handrail, to better illuminate the stair treads. Also replacing the pendant with an LED decorative pendant mounted cylinder, or other type of Luminaire with a substantial down lighting component.

ENERGY CODE IMPLICATIONS: Any alteration to the stair lighting will involve more than 50-percent of the installed lighting the new lighting, when combined with all existing lighting to remain in this area must have a power density (watts per square-foot) of less than 70-percent of the values defined in the 2012 IECC. The lighting controls within the space will also have to be brought up to the requirements of the 2012 IECC. ASHRAE 90.1 lowers this threshold to 10-percent.



IV) APPENDIX

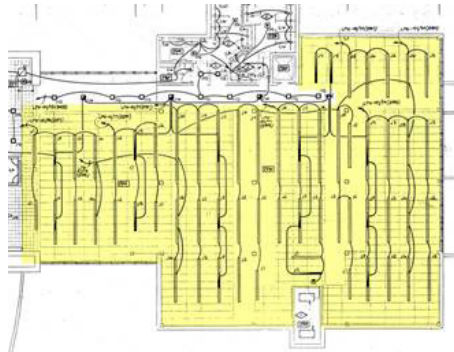
LIGHTING UPGRADES: SECOND FLOOR

SECOND FLOOR STACK AREA: ADULT NON-FICTION SECOND FLOOR

CONCERN: This area is illuminated with a pendant mounted direct type of luminaire, with one row of lights in each isle. The illumination level is adequate in this space, however occupancy sensors have been installed in each row to individually turn on each row of lights only when people are present. This means that patrons could potentially walk into a very dark stack area. There is some night lighting in this area, but it is located between the stacks and not in the aisles.

RECOMMENDATION: Lighting approach and controls shall be reevaluated based on final use of space, including collection type, size and shelving solution. At a minimum, it is recommended that the existing lights be rebalasted with dual level ballasts, allowing the lights to dim, but not turn off when there is no one in the area. This will greatly improve the impression of safety in the area. Unfortunately the cost associated with rebalasting and wiring the existing lighting is about 75% of the cost of purchasing new lights.

ENERGY CODE IMPLICATIONS: ASHRAE 90.1 does not allow both relamping and re ballasting without compliance with the lighting power densities indicated in the code. Typically the cost to relamp and rebalast is not much less than providing new luminaires.

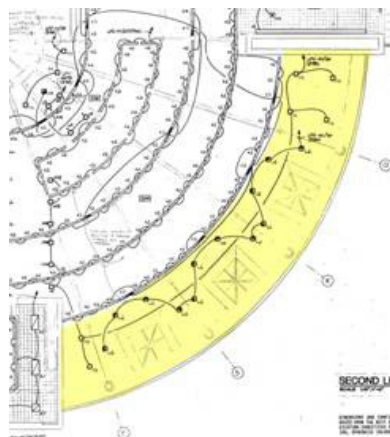


IV) APPENDIX

LIGHTING UPGRADES: SECOND FLOOR

SECOND FLOOR: DOUBLE HEIGHT SPACE

- CONCERN:** This area has lower than recommended light levels. The lighting in this area consists primarily of large aperture, recessed, adjustable downlights, which are supplemented by a combination of floor and table mounted lamps. This area is also not helped by its proximity to the windows, which do not reflect much light back into the space.
- RECOMMENDATION:** Replace the existing downlights and supplement by either 2'x 2' or 1'x 1' recessed volumetric type troffers. This will increase not only the quantity of light in this area, but also the quantity.
- ENERGY CODE IMPLICATIONS:** Since this area is considered part of the Open Stack Area. The quantity of lighting to be changed is less than 50-percent of all of the lighting in this area, and therefore as long as the power density of the lighting is reduced, the power density of the entire area does not need to comply with the requirements of the 2012 IECC. ASHRAE 90.1 lowers this threshold to 10-percent, therefore making the modification of lighting in this area much more difficult to achieve without a major modification to the lighting in the open stack area.



IV) APPENDIX

LIGHTING UPGRADES: SECOND FLOOR

SECOND FLOOR: STACK AREA

CONCERN: This area is illuminated by the cove lights located at multiple levels around the space and are supplemented with stack mounted lights. Since the stack mounted lighting is manually turned on by the patrons and automatically turn off, these lights cannot be relied upon to contribute to the overall light level in the space. The height of this space along with the almost 100% indirect nature of the lighting contribute to lower than normal light levels. The existing drawings indicate that the existing cove lights utilize an asymmetric reflector to control the light.

It appears to have been installed as an industrial type striplight with a reflector which is less than ideal for this particular application. Additionally, dirt can reduce the light output levels.

RECOMMENDATION: At a minimum, it is recommended that these luminaires be thoroughly cleaned to evaluate the increase in light levels in the space. And before determining a lighting approach, the existing cove conditions should be verified. If a cove light with an asymmetric reflector is not already installed, our recommendation is to replace the existing lighting with an asymmetric type of cove light. If a cove light is already installed and we have some leeway with the lighting power density supplemental lighting should be added to increase the light levels throughout the area.

ENERGY CODE IMPLICATIONS: Replacing the cove lights with new luminaires will not greatly improve the lighting power density in this space, and is therefore not a viable option. Since any replacement of the cove lighting will involve replacing more than 50-percent of the lighting in the space, then all new lighting, when combined with all existing lighting to remain in this area must have a power density (watts per square-foot) of less than 70-percent of the values defined in the 2012 IECC. ASHRAE 90.1 lowers this threshold to 10-percent. The lighting controls within the space will also have to be brought up to the requirements of the 2012 IECC. Bringing the existing lighting controls up to the 2012 IECC requirements will involve adding numerous lighting control zones in the existing space.

