2013 CEFPI Utah

Educational Facility Innovation Award

Technology Services Center

Davis School District

Remodel/Addition Category

Jonathan Bradshaw, AIA, LEED A.P.

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Utah Chapter

The future of education depends on becoming more productive and innovative, often through the use of technology. Technology and educational hardware and software are cornerstones in the foundation of today's self directed and engaged learning. The Technology Services Center engages ALL the 70,000 learners, faculty and administrators in this large school district. The Technology Services Center underpins all learning directly with technology from the data center and provides model teaching, demonstration and collaboration spaces to train faculty and staff in the use of technology in the classroom to support exceptional student and teacher engagement.

World-wide connections to learning begin in the Technology Services Center engaging students and faculty in three ways:

- Faculty training in a Twenty-First Century model classroom with two demonstration training rooms to promote self directed and team learning in all schools in the district.
- Direct engaged learning in the classroom through the servers in the Technology Services Center and the technological tools in the district's classrooms.
- The Center is a learning tool to help students and faculty learn about technology and engineering systems by study of the building itself. The data center has LED lights to demonstrate server data flow and the exposed building systems and monitors throughout the facility demonstrate real time data and energy use.

Ordinary materials were used in innovative ways to create extraordinary, open office and learning environments throughout the building. Opening up the building was the first task, beginning with the exterior walls. High performance glass allows light to flood every space, but controls heat loss and heat gain.

Expensive open office partitions and systems were not affordable so the team designed and constructed open office environments with metals studs and drywall with unconventional butt-glazed openings in the full height walls to connect the work and create shared, collaborative work spaces. The open office design, new window openings and interior glazed walls provide an atmosphere of collaboration and creativity to contribute to the district's mission, which exceeded owner expectations.

Narrative - Why this project is outstanding, and how it fosters exceptional student and teacher engagement (page 1)

The planning process for this training facility, data center and technology systems facility was user driven through collaborative data gathering and discussions with both the visionary leaders at the school district and the end users that support the entire district with services based in the Center.

The research and decision-making process that identified the scope of work to be designed began with a detailed facility program for the Computer Technology, Information Systems, Communications Systems Support, Technology Integration and Utility Services departments. Decisions about size, organization and relationships were collaboratively created in the program.

The economic downturn hit just as the programming completed and funding became scarce or non-existent. Plans for a new facility on a new site next to a school were changed to remodeling an existing single story warehouse to save money. But the Owner's goals for the facility did not change:

- Create collaborative learning spaces and work spaces by gathering separately located departments in a single location to provide a synergistic work environment.
- Provide natural light to occupants and to save lighting energy. (The original warehouse had almost no use of natural light).
- Energy Saving Design
- Provide all the latest and best technology available to demonstrate and train faculty
- Provide a Twenty-first Century Classroom Training environment
- Provide state-of-the-art Demonstration Training Rooms
- Accomplish it all with a small budget
- Temporarily house some departments in the building in a phased construction process to allow other related district spaces to be used for other purposes.
- Create the Building as a Learning Tool
- New Data Center

Narrative – Planning process, stakeholders and goals (page 1)

A single story warehouse was purchased by the school district and planning began to see how to fit 30,000sf of program space into a 20,000sf building that had no aesthetic appeal, no natural light in a very lightly insulated, energy inefficient existing metal building.

Narrative – Planning process, stakeholders and goals (page 2)

Innovation began with the Owner's intent to look for alternative ways to meet their technology needs with less money by putting all this new data and training infrastructure into an old aesthetically challenged metal building. This required the architect, engineers and contractor to be innovative in every decision made on the project, using all the given existing site and building assets and improving all the existing site and building liabilities to create an inexpensive solution that exceeded Owner expectations.

Data center servers create heat. The data center design using hot and cold aisles of equipment, with an innovative use of Variable Refrigerant Volume (VRV) cooling systems allows the heat generated by the data center to be used in conditioning the overall building. To our knowledge, data center cooling with VRV has not been done before and saves the owner operational energy costs for the entire facility for the life of the building. The VRV system had a lower first cost to the design and construction team, making it affordable and practical while lowering energy use.

LED lighting was explored but had limited use due to cost considerations, so inexpensive fluorescent lights with lighting controls that keep lights off most of the work day also reduce energy costs. Natural daylight through new energy efficient glazing provide views and lighting to occupants.

Design excellence was the Owner's expectation, but when management reviewed the work during construction, the effect was so stunning to them that they thought the public may be critical that a school district support structure could look too impressive, with exposed mechanical and electrical piping and systems to use as a demonstration and learning tool.

The building sits in an industrial park with similarly sized and shaped buildings but now with an overall aesthetic that lifts the spirit without calling out too much attention to the building to perfectly follow the Owner's direction to the team.

Narrative – How the completed project accomplished desired methodology and goals (page 1)

The 2 story entry to the space showcases the data center through butt-glazed walls showcasing the data flowing through the new server racks with LED lights that can be colored to exhibit data flow in custom colors to illustrate the building as a learning tool with screens that show school district data use.

Color is used sparingly but effectively on a few wall structures to provide focal elements and accents to the spaces.

The open office design, new window openings and interior glazed walls provide an atmosphere of collaboration and creativity to contribute to the district's mission, which exceeded owner expectations and more than met their goals.

Demonstration spaces and the twenty-first century classroom environment facilitate the Owner's goals to enable educators to integrate technology, tools and trained faculty in their classrooms throughout the district.

The design continues the owner's commitment to energy efficient building design and operation by incorporating sustainable design measures such as natural daylighting, energy efficient lighting including LEDs, energy saving VRV systems to use data center heat in innovative energy efficient ways, and a tightened, insulated building envelope re-using most of the existing skin with the addition of energy efficient glazing.

All these sustainable design measures and systems are exposed to view by design to demonstrate how the building works to users so the building is a teaching tool in sustainable design as well as conserving precious educational resources.

Narrative – How the completed project accomplished desired methodology and goals (page 2)

Photo #1

Before and After Exterior

Photo #2

Photo #3

Photo #4

Photo #5

Photo #6

Photo #7

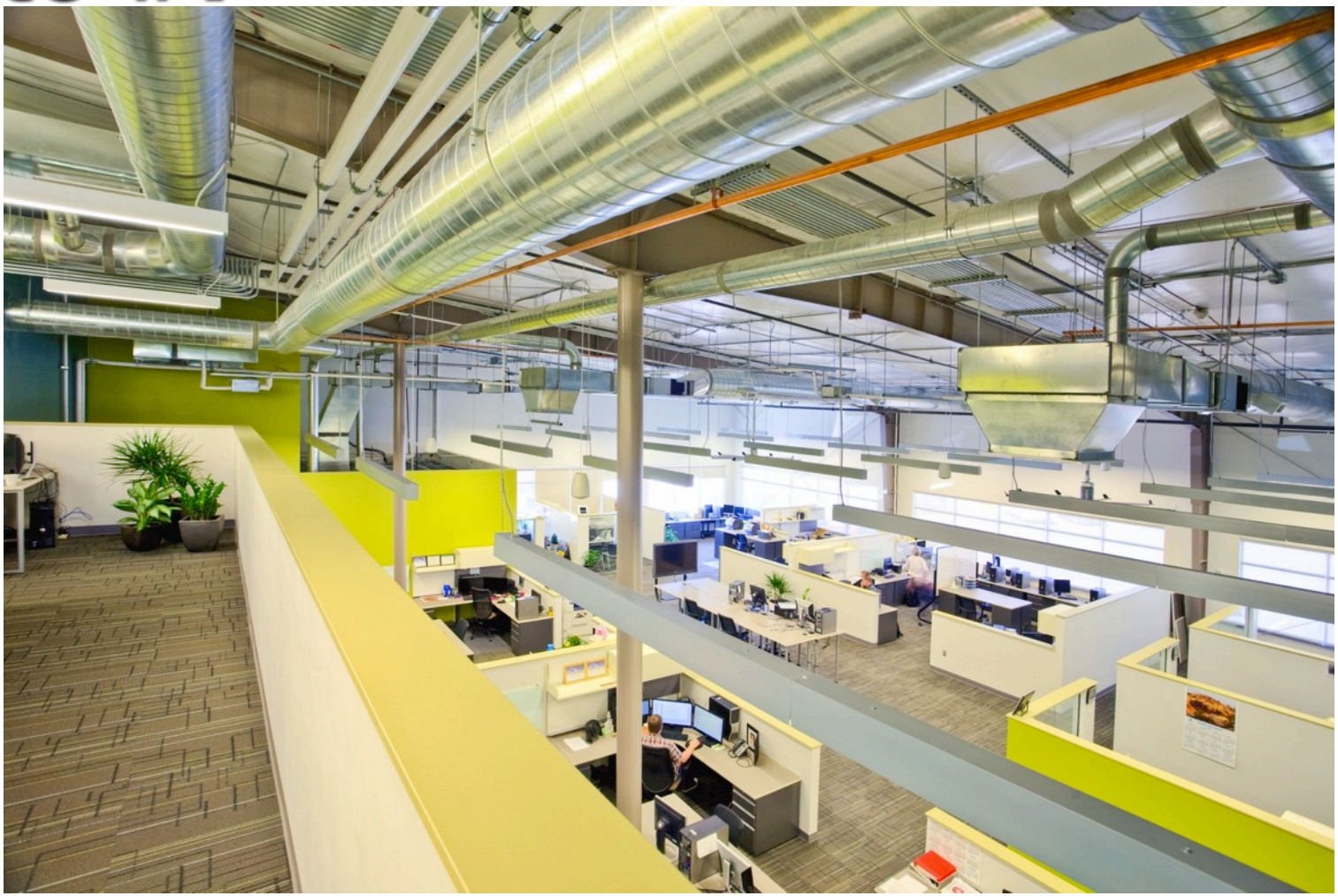
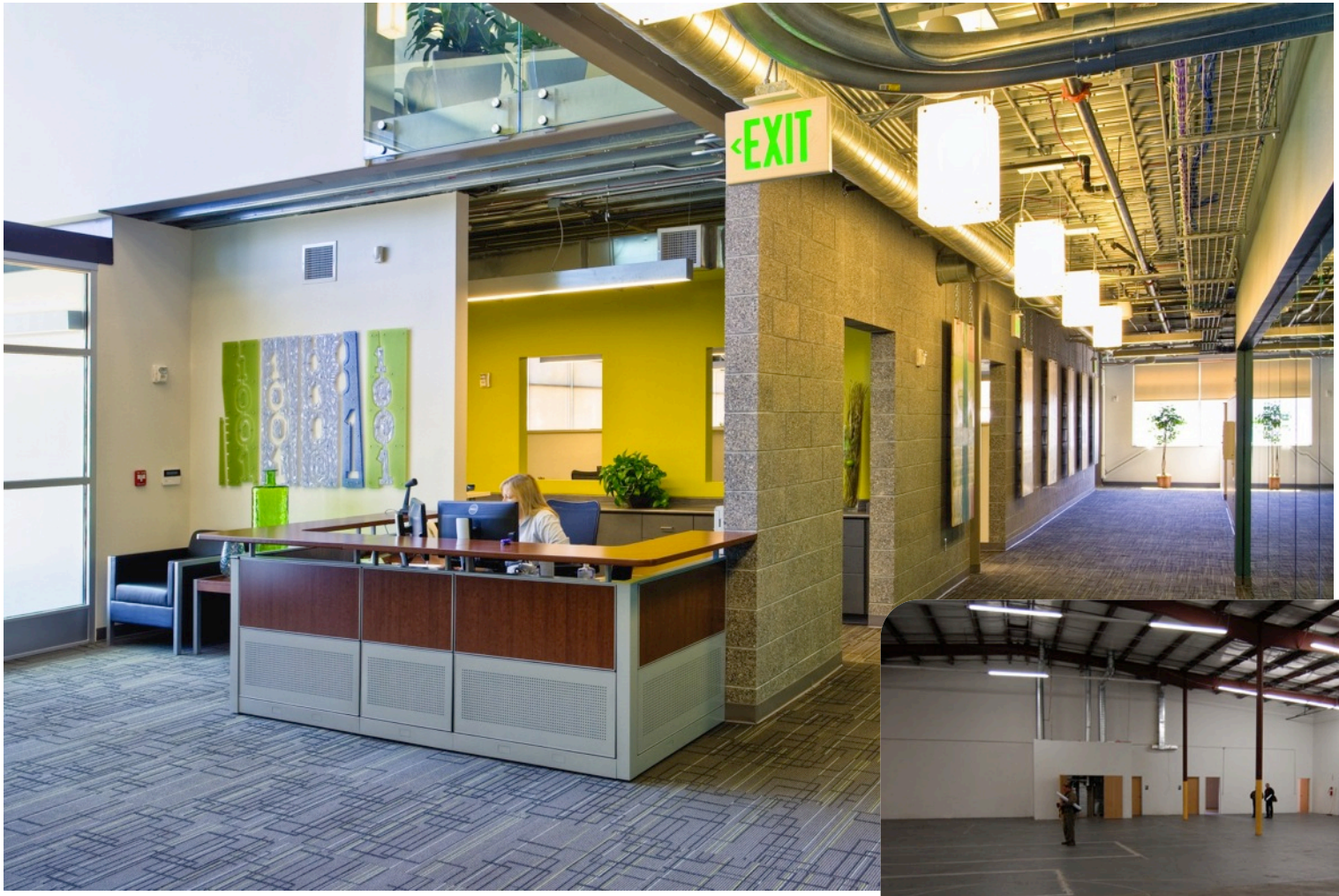
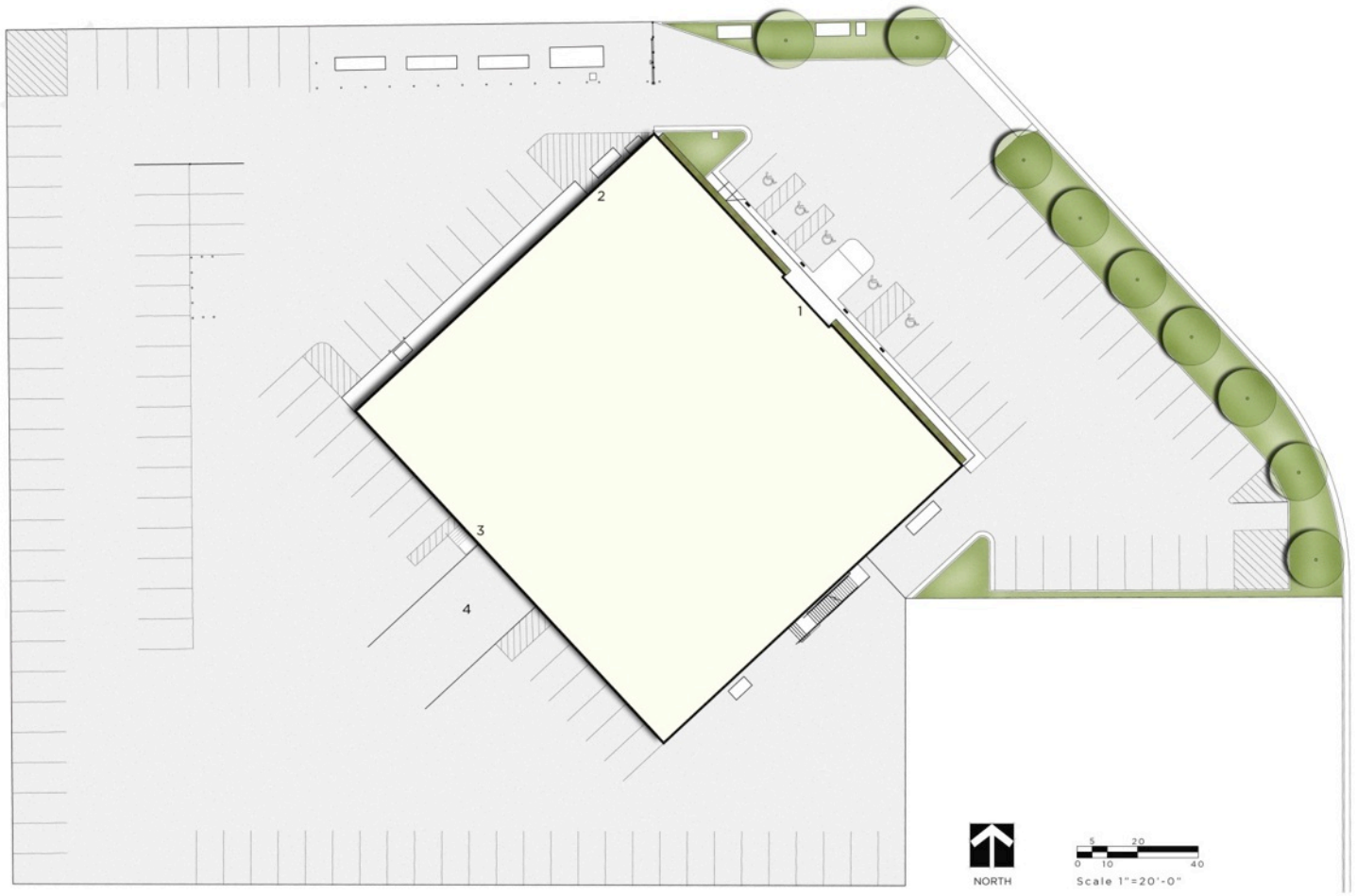


Photo #8



Before and After Interior

Entrance

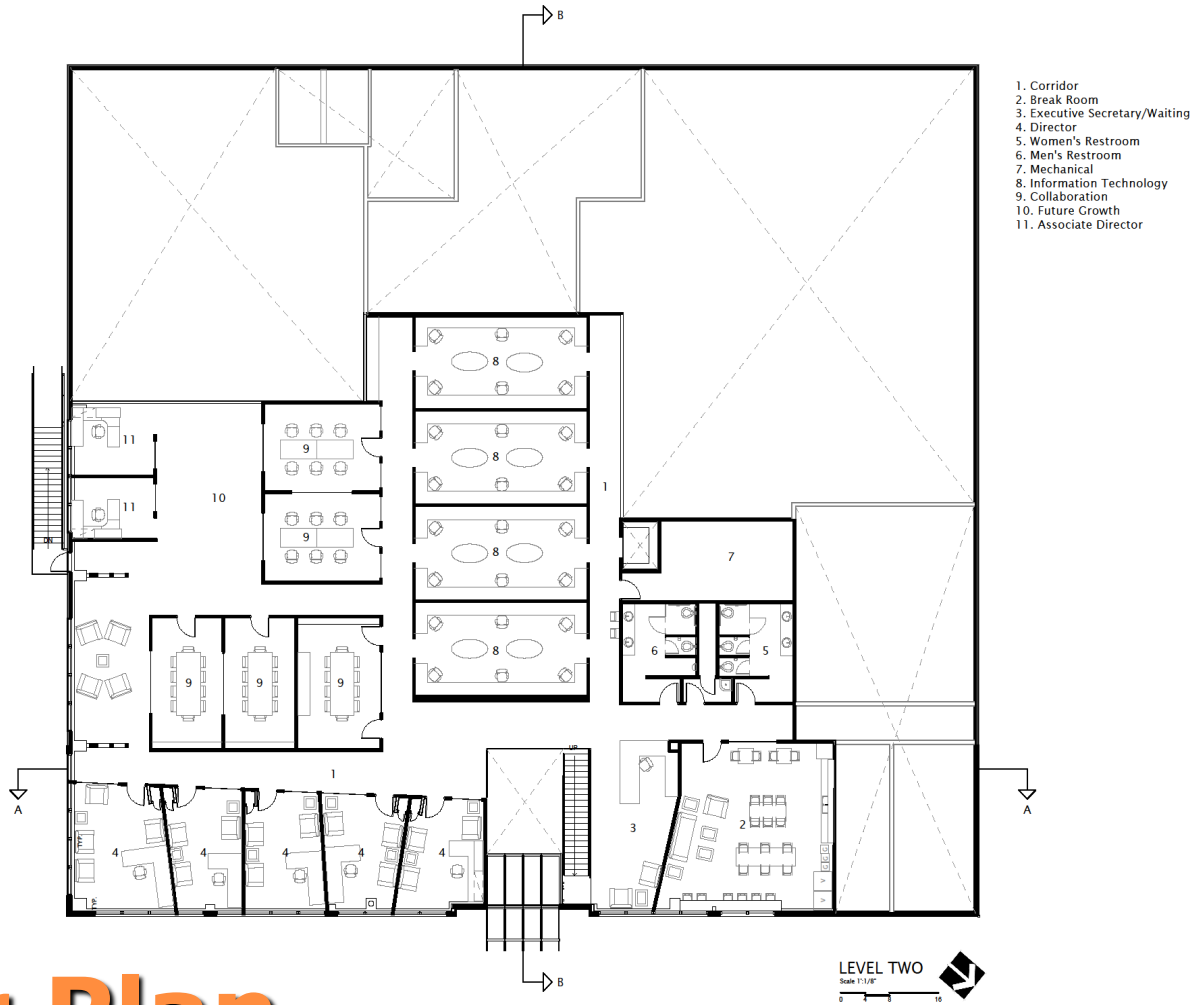


1. MAIN ENTRANCE
2. SIDE DOOR
3. SERVICE ENTRANCE
4. DOCK

Site Plan


1. Corridor
2. Mechanical
3. Storage
4. Break
5. Technology Demostration Training
6. Lobby
7. Reception
8. Call Center
9. Information Systems
10. 21st Century Training
11. Women's Restroom
12. Men's Restroom
13. Storage
14. Data Center
15. Network Operations Center
16. Assistant Director
17. Future Office Space
18. Office
19. Staging
20. Control
21. MDF
22. Computer Tech Support
23. Lockers
24. Shipping & Receiving
25. Dirty Room
26. Utility Services
LEVEL ONE

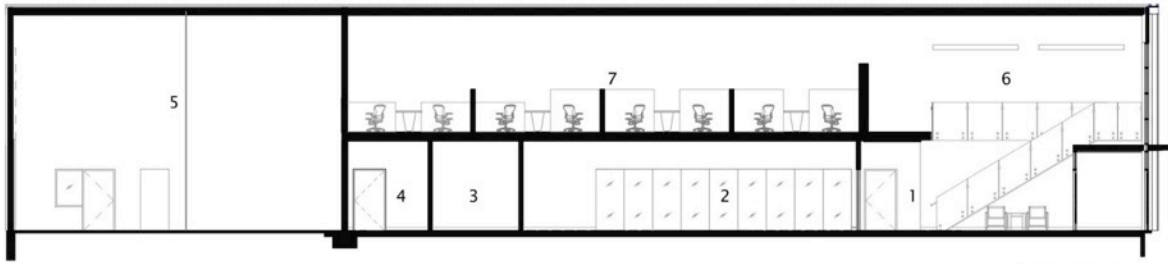
Floor Plan


B
A
A
B
1. Corridor
2. Break Room
3. Executive Secretary/Waiting
4. Director
5. Women's Restroom
6. Men's Restroom
7. Mechanical
8. Information Technology
9. Collaboration
10. Future Growth
11. Associate Director
LEVEL TWO

Floor Plan

1. Information Systems
2. Lobby
3. Technology Demonstration Training
4. Break
5. Mechanical
6. Corridor
7. Executive Secretary/Waiting
8. Break Room

SECTION A



1. Lobby
2. Data Center
3. Control
4. MDF
5. Shipping & Receiving
6. Executive Secretary/Waiting
7. Information Technology

SECTION B

Sections

Project Details

1. Project Name	Technology Services Building	
2. District Name	Davis School District, Farmington, UT	
3. Award Category	Remodel/Addition	
4. Superintendent	Dr. Bryan Bowles	
5. Contact Person	Name:	Jonathan Bradshaw, AIA, LEED A.P.
	Email:	jbradshaw@gsbsarchitects.com
	Phone Number:	801-521-7913
6. Type of Facility	Renovation/Addition	
7. Number of Students Impacted	About 70,000	
8. Project Size	29,750 Square Feet	
9. Occupancy Date	Partial Occupancy during construction and fully occupied in November 2013	
10. Design Professional	GSBS Architects, Salt Lake City, UT	
11. General Contractor	Ascent Construction, Centerville, UT	

Print, Sign, Scan and Submit with Package

Name of Project: Technical Services Center

Location of Project: Layton, Utah

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School District: Davis School District

Responsible Party/Photographer: Benjamin Lowry

Print Name: Benjamin Lowry

Signature: 

Date of Release: November 15, 2013

Photo Release: *(Return SIGNED copy with your submittal)*