West Jefferson Hills School District

835 Old Clairton Road
Jefferson Hills, PA 15025

JC PIERCE llc

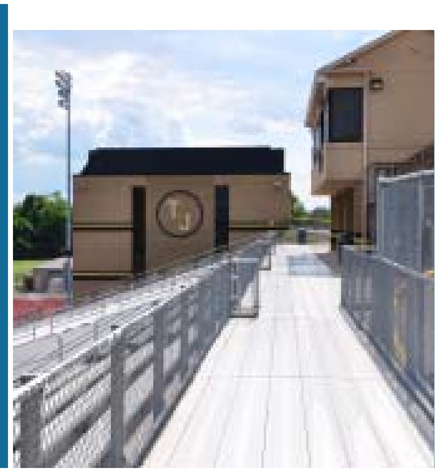
Architecture

Engineering

Strategic Master Planning

Construction Management

Master Plan Study



August 15, 2013

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Executive **Summary**

The West Jefferson Hills School District is approximately 12 miles south of the City of Pittsburgh, PA; and is comprised of the communities of WEST Elizabeth, Borough of JEFFERSON Hills (formerly Jefferson Borough), and Pleasant HILLS Borough.

The District consists of three (3) elementary schools, one (1) middle school, and one (1) high school complex. District support facilities include a stadium adjacent to the high school campus and a district administration office building. The District Buildings with enrollment numbers for the 2012-2013 school year include:

Gill Hall Elementary	K-5	282 Students
Jefferson Elementary	K-5	564 Students
McClellan Elementary	K-5	383 Students
Pleasant Hills Middle	6-8	668 Students
Thomas Jefferson High	9-12	901 Students
Total:	K-12	2,798 Students

The West Jefferson Hills School District completed capital improvement projects during the early 2000's. The program included substantial upgrades to the Thomas Jefferson High School Stadium (2001-02); as well as additions and alterations at Gill Hall Elementary (2002), McClellan Elementary (2002), and Pleasant Hills Middle School (2003). Prior to these capital improvement projects: Jefferson Elementary School was built in 1990; and limited additions and alterations occurred at Thomas Jefferson High School in 1992.

This District-wide Master Plan Study was conducted utilizing the Strategic Master Planning for School (SMPS) process, developed by *JC* Pierce llc. This is an interactive, consensus-building process for identifying the Strategic Goals of the school district, and developing options to meet those goals. This process commenced in second quarter 2012, and culminated with the release of this Final Report.

During this process, *JC* Pierce and our consulting engineers, Loftus Engineers, conducted detailed field evaluations of all District Facilities. Upon completion, *JC* Pierce presented the findings to the Board and Administration in the form of an Existing Conditions Evaluation Report, which is bound herein.

The District participated in two Knowledge-Base Workshops – interactive forums for discussion to develop the "Knowledge Base" that would be used to formulate options for the project. These workshops were attended by Community Members, District Administrators, Teachers and Staff, and Board Members. At the conclusion of these workshops, the District developed Strategic Goals to guide project decisions (see Strategic Design Statement). To meet these goals, *JC* Pierce developed a series of Options to address three categories of concern: Asset Protection at All District Buildings; Potential Future Growth at All District Buildings; and Modernization of the High School Facilities. These Options were presented to the Administration, the Board, and the Public for review and feedback.

EXECUTIVE SUMMARY

The Options were evaluated by both the District (Administrators and Board Members) and the Master Planning Professionals (Architects and Engineers) as to how well each Option met the Strategic Goals. All data from the evaluations was incorporated into an Evaluation Matrix, and presented to the Board, Administration and the Public.

Based on the Evaluation of the Options, *JC* Pierce produced a series of Recommendations for each of the areas of concern. Those recommendations and the supporting rationale are included in this Final Report. The District, working in conjunction with the Master Planners, has also developed a 10-year Facilities Master Plan for upgrading and maintaining the District Physical Plant.

For the process to proceed, the District must now adopt this Master Plan Study, as well as the 10-year timeline included herein.

This Final Report document contains:

1. **Executive Summary:** An overview of the District-Wide Master Plan Study;
2. **Overview/ Methodology:** An expression of the methods and processes used for the development of the study;
3. **District Overview**: A summary of the District and it's unique characteristics;
4. **Facility Evaluation Report**: A detailed evaluation of the Condition of the Existing Facilities in the District;
5. **Facility Priority Report:** A condensed version of the full Facility Evaluation Report; expressing only the High and Medium Priority Issues;
6. **Asset Protection Projects:** A summary, estimated cost, and implementation schedule for District identified priority issues;
7. **Summary of Strategic Goals:** Documentation of the Knowledge-Base stakeholder process and the Strategic Goals derived from that process;
8. **Analysis of District Options:** Documentation, diagrams, programming, and cost modeling for all Strategic Options (as appropriate); an analysis of each Option;
9. **Building Program Schedule**: A Master-Plan Implementation Plan/Schedule;
10. **Enrollment/ Demographics:** A Demographic Study prepared for the District by a Professional Demographer (Shelby Stewman);
11. **Educational Program**: Current District Educational Programming/ Curriculum standards and Guidelines;
12. **Strategic Design Workshop Notes**: Documentation of the Knowledge-Base stakeholder process and results;
13. **Board Presentations**: Presentations given to the Board and Public;
14. **Energy Star Portfolio**: Energy Portfolio Surveys of each existing building including facility benchmarking, using the EPA/ DOE Portfolio Manager Tool, identifying the annual site and source energy and water consumption;
15. **Building Capacities**: An expression of the PlanCon Full Time Equivalent (FTE) capacities for the District facilities;
16. **Authors' Credentials:** JC Pierce credentials and K-12 experience.

STUDY OVERVIEW/ METHODOLOGY

Feasibility Study **Overview/Methodology**

Study **OVERVIEW**

JC Pierce, llc was retained by the West Jefferson Hills School District for the addendum to the current District-Wide Feasibility Study. The culmination of the feasibility study addendum is a Final Report which bridges off of the current district configuration, curriculum requirements, current and projected enrollments, building capacities, evaluation of the district facilities, development of construction options, construction cost estimates, and analysis of district options. In short, this process asked and answered three questions:

Phase I – Where are you now?

In the initial study, JC Pierce, llc reviewed the current conditions of the district sites and facilities. These findings were released in the form of a Facility Evaluation Report. The following parameters were reviewed and validated as part of this building evaluation process:

- Current and Future Enrollment;
- Capacity Requirements;
- Program Space requirements and area, including new program spaces in accordance with current and future curriculum requirements;
- Site Summary including: Site Circulation, Bus Drop-off, Parent Drop-off, Parking, and Building Access;
- Accessibility Issues;
- Building Summaries including the Building Envelope, and Building Interior;
- Building Mechanical Summaries including: Heating, Ventilating, and Air Conditioning (HVAC) Systems, Central Cooling Plant, Central Heating Plant, and Exhaust Systems;
- Building Plumbing Summaries including: Supply, Sanitary, Storm, and Fire Protection Systems;
- Building Electrical Summaries including: Service Entrance, Power Distribution System, Emergency Power, Fire Alarm System, and Lighting;

STUDY OVERVIEW/ METHODOLOGY

Phase II – Where do you want to go?

In this phase of the original study, JC Pierce, *llc* executed an interactive strategic design process to ascertain the Strategic Goals of the District.

Activities performed during this phase included but was not limited to:

- Facilitation of two (2) Knowledge-Base stakeholder workshops for the Board, Administration, and the Community
- Interviews of District Staff and Administrators
- Research into District history, demographics, and financial situation
- Review of the Educational Plan and Demographic Study

Phase III – How are you going to get there?

In this phase, the project team evaluated the Strategic Goals and develops construction options and various district growth options for review by the District Administration and the Board. Each option was then evaluated against the strategic goals, and a rating was assigned based on how well that option achieved the stated goal(s).

This information was then compiled into an evaluation matrix, which was reviewed by the Administration and the Board. A round table discussion was conducted; feedback was incorporated into the evaluative process. A final recommendation was then issued to the Board.

- A presentation of the District Strategic Goals was presented January 15, 2013.

- A presentation of preliminary options and cost analysis was made to the Board and Public on February 4, 2013.

- A presentation of options analysis was made to the Board and Public on March 13, 2013.

- The preliminary final report dated April 23, 2013 included a recommendation of preferred options.

- This final report dated August 15, 2013 includes the subsequent revisions to the preliminary final report and final option(s) analysis and recommendations for the Board of Directors to adopt.

STUDY OVERVIEW/ METHODOLOGY

PROJECT **METHODOLOGY**: *Strategic Design*

JC Pierce, *llc*'s pre-design process provides that the inherent design issues of site, context, building topology, precedent, community, environment, regulations, schedule and budget are effectively and appropriately dealt with. Early in the planning stages of the feasibility study, JC Pierce serves as a facilitator that builds consensus among all study team members. The team effectively and sensitively addressed the District's needs related to strategic planning issues, district operations, staff and student productivity, identity, project delivery method, budget and cost.

JC Pierce led a program that we have adopted entitled the "Strategic Design Process". This system was developed to determine what a successful master-plan outcome would be – for all district stakeholders. We asked a series of questions that resulted in debate about what the stakeholders needed and wanted. The primary focus of this debate, therefore, was to develop the goals of the master-plan, and identify the intangible design parameters. Once identified, these goals and parameters, combined with the inherent design issues listed above, resulted in the Design Guidelines Statement for the master-plan. As the feasibility study proceeded, all master-plan related decisions were evaluated against this "Knowledge Base" that our team created together.

This process was an open and fluid one. Previously asked questions and the resultant answers were revisited, based on subsequent questions. The goal was to produce design concepts and to evaluate them in terms of the derived knowledge about stakeholder expectations and requirements related to quality of life in the school district.

Each issue was written in the form of a question. The intent was to stimulate debate, and foster a team environment. Each team member (stakeholder) applied their experience-based knowledge and positively affected the design of the master plan.

The results of these sessions produced Design Guidelines for the team and identified the Strategic Goals.

West Jefferson Hills School District

Overview

District **Location**

The West Jefferson Hills School District is comprised of the comprised of the communities of WEST Elizabeth, the Borough of JEFFERSON Hills (formerly Jefferson Borough), and Pleasant HILLS Borough. The District is located in southern Allegheny County, approximately 12 miles south-southeast of the City of Pittsburgh. The community is in the Eastern Time Zone; at Latitude 40.56’12’’N, Longitude 79.50’56’’W.

Community **Profiles:**

West Elizabeth Borough

History of West Elizabeth Borough:
(Excerpts from the Community Website http://www.svcog.org/weliz.html)

The community’s origins are traced to a Frenchman named Arnold Ville who made the journey from New York on foot and by canoe. West Elizabeth has at different times been in the counties of Cumberland, Bedford, Washington and Allegheny respectively. In 1833 Gilbert Stephens, Samuel Frew, Andrew Craighead and Erastus Percival unofficially established West Elizabeth. Soon after settling, Stephens began one of the first industries - building steamboat hulls. In 1834 Property owner Thomas Robinson offered $50 to the person who would build the first house. The winner was John Keenan who built at the corner of Second and Market streets.

In 1842 The first coal mine was established on a hillside which is claimed to be the first place in the Mon Valley were coal was mined to be shipped elsewhere via water. Also in 1842, the first post office was established. In 1848 West Elizabeth was incorporated as a borough by a special act of the state legislature taken from Jefferson Township, which at that time was claimed by the colony of Virginia. In 1852 A major flood led to the demise of the boat industry by the following year.

In 1893 the ferry connecting Elizabeth and West Elizabeth went out of business when the first Elizabeth Bridge was opened. The new overpass connected to Williamsport Road. In 1948 Construction began on the existing Elizabeth Bridge that connects West Elizabeth and Elizabeth Borough, consuming many commercial and residential properties for creation of the bridge ramp.

DISTRICT OVERVIEW

Demographics:

West Elizabeth Borough is primarily made up of relatively flat open land and some wooded areas; located in the floodplains on the Monongahela River. The boundaries of West Elizabeth Borough encompass 0.3 square miles; 0.1 of which is water. West Elizabeth borders the community of Jefferson Hills Borough to the north and west; and Elizabeth Borough to the south and east.

The estimated population of West Elizabeth Borough in 2010 was 565. According to the 2010 census, the median household income in West Elizabeth Borough was $26,339; compared to the national average median household income of $50,054. The per capita income in West Elizabeth Borough was $14,687 compared to the national average of $39,791.

During the 2010 Census, the median value of owner-occupied homes in West Elizabeth Borough, was $65,000; Monthly homeowner cost including mortgages was $970. The population of West Elizabeth Borough is 99% Caucasian and 1% African American/Asian/Other.

Jefferson Hills Borough

History of Jefferson Hills Borough
(Excerpts from the Community Website)

Native American History Before 1750
The first inhabitants of the area are commonly referred to as the “Mound Builders.” A prehistoric people, their occupancy preceded Native American tribes of the Mohawk, Shawnee, and Iroquois nations. Stone axes from the prehistoric people and remnants of the Native Americans have been found in the area. The foundation markings of a wilderness fort, today known as Fort Field, was found located near the confluence of Peter’s Creek and Lewis Run in the Large section of Jefferson Hills. Not known is whether this was an Indian fort or a fort to protect early settlers against the Indians.

Colonial Settlement 1750-1770
Early Europeans in the area were fur trappers. The first white settler according to printed histories was Zadock Wright, a Virginian and teamster in General Braddock’s army. According to Joseph Parry in his book The Lost County, Wright made application to the Virginia authorities for a tract of land that would later be known as Wrightsburg. He was granted 400 acres on Peters Creek. Since Wright’s charter (which still exists today) does not give a date, Parry suggests that Richard McMahon was actually the first settler. A warrant for 318 acres was issued to McMahon and a survey was completed in 1769. Another historian, Noah Thompson, states in his book *Early History of the Peters Creek Valley and the Early Settlers* that Benjamin Kuykendall was the first settler in Jefferson Hills. Kuykendall was said to have first passed through the area in 1755 on route to Fort Duquesne on Braddock’s quest to take the fort from the French. Braddock’s campaign failed, but Kuykendall returned to settle in Jefferson Hills in 1757 according to Thompson. He later served as a Justice of the Court of Yohogania County. Other early families include the names of Castor, Carroll, Wicks, Snee, Huffman, Stilley, Cochran, Ferree, and Large. The early families were mainly farmers and trappers.

Henry Large owned a local distillery, and commanded the Peters Creek Rangers, who protected local residents and kept order during the Revolutionary War. Residents of Jefferson Hills also fought in the war for independence and seven veterans are buried in local cemeteries. A Native American known as Indian Peter also lived for a time in the Large section of Jefferson Hills. He hunted and fished the creeks and streams of the area. According to legend, Peter warned local farmers of impending raids on several occasions. The grateful settlers began to call him "Good Peter" or "Good Indian Peter." When he passed on, they named his favorite stream "Peters Creek.".

Early American History 1770-1800
Not until the adoption of the Mason Dixon line did the land of present day Jefferson Hills become a permanent part of the Commonwealth of Pennsylvania. Prior to 1780, the State of Virginia claimed the land in much of southwestern Pennsylvania. In exercising authority over the area, Virginia had established the County of Yohogania. The County Courthouse would be built in present day Jefferson Hills and the first session of the new court was held on October 27, 1777. Though the exact location of the building is not known, historical records place it near the old Jones School and Route 837 in the Floreffe section of the borough. In his book, Parry describes the setting " … the old log courthouse … stood in all it's glory on the hill, surrounded with deep forests, a few hundred feet west of the pure flowing waters of the Monongahela River. Here also stood in the courtyard, the pillory and the whipping post used for the purpose of punishing offenders of the law…. Scattered here and there, were a few log cabins of early settlers. Only a few acres of land had been cleared. It was indeed, a wilderness." The court was permanently closed on August 28, 1780 by agreement of the Pennsylvania and Virginia Assemblies. Yohogania County Virginia, created in 1776 was dissolved in 1781.

In November 1794, the Court House, now owned privately, would serve as the quarters for officers under General Daniel Morgan's command during The Whiskey Insurrection. Dispatched by President Washington to quell an uprising by local farmers over an excise tax on whiskey, Morgan stationed 1500 men along the banks of the Monongahela River. The soldiers remained during the winter of 1794/1795, and many fell victim to small pox. They were buried in Lobbs Cemetery, which is located on Walton Road near Route 837.

Now in the Commonwealth of Pennsylvania, the area became a part of Washington County in 1781 and Allegheny County in 1788.

History of Jefferson 1800-Present
Jefferson Hills was first created as a township (Jefferson Township), incorporating on January 22, 1828 and named in honor of the third President and author of the Declaration of Independence, Thomas Jefferson. Statesman, patriot, author, architect, farmer, lawyer, philosopher, inventor, - Mr. Jefferson's achievements are unparalleled and his place in history is unmatched. It was formed from parts of Mifflin and St. Clair Township and included within its borders the present communities of Pleasant Hills, West Elizabeth, Clairton, and parts of Baldwin and South Park. Baldwin Township in 1844 and Snowden Township in 1845 was formed from a part of Jefferson Township.

In 1860, there were 1601 residents in Jefferson Township. By 1880, the population doubled to 3227. During the mid 1800's, churches were formed and built – Jefferson Methodist Church in 1843 and the Jefferson United Methodist Church in 1857. The latter, located in the Gill Hall section of Jefferson Hills, still stands today. Local historians suggest that the first school house was probably built in the Gill Hall area, but dates and the exact location are unknown.

Residents of Jefferson Hills fought in the Civil War. A total of sixteen soldiers are buried in three local cemeteries: five in Lobb's Cemetery, five in the Jefferson United Methodist Cemetery, and six in the Jefferson United Presbyterian Church Cemetery. The graves of the Civil War veterans are marked with the American flag and a star shaped bronze marker with GAR (Grand Army of the Republic) 1861-1865 on them.

While the earliest families settling here were mainly farmers, the 19th century saw a shifting in local economics. Coal mining became a lead industry as it did throughout Western Pennsylvania. Number 7 Coal Mine, owned by Pittsburgh Terminal Coal, was a large operation located near Route 51 and Peters Creek. The company built a mini community in an area today known as the "Patch": approximately 50 homes for its workers, a company store, movie theater, post office and school.

In 1902, the Brickyard was established to supply bricks for the nearby steel mills. U.S. Steel was to become a major employer of people residing in Jefferson Hills, especially the mills north of Jefferson Hills along the Monongahela River. In 1950 Jefferson Township incorporated as a Borough. Residents voted by referendum on November 3, 1998 to officially change the name of the borough from Jefferson to Jefferson Hills.

Demographics:

Jefferson Hills Borough primarily consist of rolling hills and wooded areas which borders the flood plains of the Monongahela River. The borough contains three streams which are a part of the Monongahela water shed.

The boundaries of Jefferson Hills Borough encompass 16.9 square miles. The Jefferson Hills Borough borders the communities of Pleasant Hills and West Mifflin Borough to the north; the City of Clairton and West Elizabeth Borough to the east; Forward Township and Union Township to the south; and South Park to the west.

The estimated population of the Jefferson Hills Borough in 2010 was 10,650. According to the 2010 census, the median household income in Jefferson Hills Borough was $70,293; compared to the national average median household income of $50,054. The per capita income in the Jefferson Hills Borough was $13,242, compared to the national average of $39,791.

During the 2010 Census, the median value of owner-occupied homes in Jefferson Hills Borough, was $168,000; Monthly homeowner cost including mortgages was $1,547.

The population of Jefferson Hills Borough is 96% Caucasian and 4% African American/Asian/Other.

Pleasant Hills Borough

History of Pleasant Hills Borough
(Excerpts from the Community Website)

With slightly less than 3 square miles of land within its boundaries, Pleasant Hills Borough is uniquely situated in a growing area of Allegheny County eight miles southeast of Pittsburgh, PA. Surrounded by reminders of a long history in southwestern Pennsylvania, residents share a pride in the vital community we are today and eagerly plan for the future. We have been deliberate in our efforts to preserve our heritage. Within our borders, we have a privately owned, log home dating back to 1774 which is listed on the state's registry of historic buildings. Remains of the outdoor summer kitchen and an apple orchard are still clearly present. Little is known about the owner and builder of the three story log and red brick home. It is believed he was a German immigrant. This helps explain the three story construction of the log section. Despite plenty of room to build his home, large, heavy, hand hewn logs were raised higher and higher into place in the traditional building custom of his homeland. In 1840 the "new addition" was built. The red brick exterior was made on-site using the abundant clay found on the property.

Another beautiful stone house known as the "Torrence House" which dates back to 1797 is still privately owned and occupied on modern day Colson Drive. Additionally, Pleasant Hills Borough is one of the few communities in the United States with its own preserve of virgin woodland. Named in honor of the donor, The A. W. Robertson. The Arboretum, is a 16 acre tract of land containing trees that have been growing here since the Delaware, Shawnee and Mingo Indians were the only people to call the area home. The state certified several trees within this preserve as being over 200 years old at the time of the America's bicentennial in 1976.

Originally part of the vast Province of Virginia, what is now our Pleasant Hills Borough was in turn a part of Yohogania County, Westmoreland County, Washington County and finally, in 1788, it became a part of the newly established Allegheny County. The first land owner of record was John Reed, Jr. He named the area Reedsburg and built a log cabin on what is now Orchard Drive. A brother-in-law of his, William Walker, soon followed John and settled on a farm nearby which he named "Pleasant Hill Farm". The stone farm house he built later became a tavern and a stage coach stop. It was located near the Route 51/Lebanon Church Rd Cloverleaf. Today, this home, as well as many other historic local scenes, can be seen in the pictorial history of Pleasant Hills at the Pleasant Hills Public Library.

During the last quarter of the 18th century, Reed and Walker were joined by other settlers who were mainly farmers of rye and corn crops. Most of the grain grown on these farms was converted to whiskey as that was the easiest and most profitable product to transport over the mountains to the eastern markets. In the early 1790's, the new US Government placed a high excise tax on whiskey. Many of the areas farmers felt unfairly persecuted by their new government. Tempers ran hot as many farmers refused to pay their levies and destroyed the stills of farmers who did.

DISTRICT OVERVIEW

The Whiskey Rebellion, as it was called, became one of the first challenges to the governing authority of the new American government. Fighting broke out all over the "South Hills" area. Well armed groups of farmers waged their war against the government's revenue collectors going so far as to set fire to the "revenuer's" homes and robbing the US Mail. Not surprisingly, troops were soon called in from Philadelphia to put down the insurrection. In the end, some of the rebel leaders were taken to the state capital to be tried for Treason. Ultimately, they were all pardoned.

After the Whiskey Rebellion, the area enjoyed over 100 years of peace. During this time, many political subdivisions took place. In 1828, Jefferson Township was carved out of Mifflin and St. Clair Townships. Over the next 18 years, Jefferson would lose parts of its township to Baldwin Township and Snowden Township (known as South Park Township today). These subdivisions and realignments quieted down for another century. During the 1930's however, the rural nature of the area began to change rapidly.

The first plan of suburban, residential streets and homes actually opened in 1929 along Airport Road - now known as Lebanon Church Road. Despite the Depression, other developments opened new streets for new home construction. "Suburbia" now included new home owners on Betty Rae Drive, Melvin Drive, Old Lebanon Church Road and Pleasant Hills Boulevard. Local resident, Bill Green had a small refreshment stand on the corner of Old Clairton Road and Route 51 - which was not much more than a back country road at the time. The new development brought prosperity to the area and soon Bill Green's grew into a famous Pittsburgh Night Club.

Finally, in December of 1946, local residents wanting to break away from the still rural majority of Jefferson Township petitioned for incorporation as the Borough of Pleasant Hills. Originally, Pleasant Hills consisted of 837 homes and a total population of 2500. Within 25 years, it had grown to 2630 homes with a population of 10,500. Residents earned livelihoods from: the local steel industry giants of US Steel, (now USX), J&L Steel and Bethlehem Steel; Gulf Oil; Koppers; General Motors; Dravo; Mellon Bank and Pittsburgh National Bank. Many small business owners and professionals in the the legal, medical, insurance and accounting fields enjoyed the small town community life of Pleasant Hills.

Today, Pleasant Hills has 3500 households and approximately 9000 residents. Pleasant Hills is a popular suburb for new home buyers with everything from "first home" to "dream home" to "retirement home" in its housing stock. You have to move quickly to buy one, though, as houses frequently sell within days of listing, (not uncommonly, even before being listed!). Despite the decline in the local steel industry and many other corporate giants merging away, Pleasant Hills has enjoyed a slow, but steady growth coupled with a low turnover in residential housing. This means neighbors live next door long enough to get to know each other - often attending the baptisms, graduations and weddings of the same neighborhood children. Children who grew up in Pleasant Hills often return, if circumstances permit, to raise their families in the same supportive community atmosphere they enjoyed.

DISTRICT OVERVIEW

Demographics:

Pleasant Hills Borough is primarily made up of rolling hills and wooded areas.

The boundaries of the Pleasant Hills Borough encompass 2.5 square miles. The Borough of Pleasant Hills is bordered by Baldwin Borough on the north, West Mifflin Borough on the east, and Jefferson Hills Borough on the south and west.

The estimated population of Pleasant Hills Borough in 2010 was 8,270. According to the 2010 census, the median household income in Pleasant Hills Borough was $63,815; compared to the national average median household income of $50,054. The per capita income in Pleasant Hills Borough was $27,500, compared to the national average of $39,791.

During the 2010 Census, the median value of owner-occupied homes in Pleasant Hills Borough, was $147,000; Monthly homeowner cost including mortgages was $1,367.

The population of Pleasant Hills Borough is 97% Caucasian and 3% African American/Asian/Other.

DISTRICT OVERVIEW

District **Profile**

The West Jefferson Hills School District Mission Statement:
Students are the primary focus of the West Jefferson Hills School District where, in partnership with families and community, the mission is to educate and prepare all students to become active, contributing members of society by providing a challenging, innovative educational program guided by an exceptional staff in a safe, positive, caring environment, all of which promote excellence.

The District consists of three (3) K-5 Elementary Schools, one (1) 6-8 Middle School, and one (1) 9-12 High School complex. District support facilities include a stadium adjacent to the high school campus, district central administration building and maintenance garage, and several other properties owned by the District.

In 2012/13, the District population was:

Gill Hall Elementary	K-5	282 Students
Jefferson Elementary	K-5	564 Students
McClellan Elementary	K-5	383 Students
Pleasant Hills Middle	6-8	668 Students
Thomas Jefferson High	9-12	901 Students
Total:	K-12	2,798 Students

The District Budget for 2012-13 was: $37,814,555. Average cost per student for WJHSD was $13,514/Student. Millage for the WJHSD was 21.08 mils.

District **Achievement**

All West Jefferson Hills School District schools were recognized by The Pennsylvania Department of Education (PDE) with the Keystone Achievement Award. This is awarded to schools that have met their Adequate Yearly Progress (AYP) improvement targets for two consecutive years. The PDE and the PA Association of Federal Program Coordinators (PAFPC) have partnered to create the Keystone Achievement Award as a public recognition of the fine work and commitment of Pennsylvania educators and students for sustained improvement in teaching and learning, and achievement for all students.

In 2010, the Pittsburgh Business Times ranked West Jefferson Hills School District, **9th out of 105** western Pennsylvania School Districts for student achievement/test scores.

Thomas Jefferson High School was ranked 10th out of 123 western Pennsylvania High Schools. Pleasant Hills Middle School was ranked 21st out of 126 western Pennsylvania Middle Schools. The rankings for WJHSD Elementary Schools were: Gill Hall Elementary (18th), Jefferson Elementary (28th), and McClellan Elementary (49th) out of 297 western Pennsylvania Elementary Schools. Rankings were based on PSSA test scores from 2005. These rankings indicate that West Jefferson Hills School District is one of the highest student-achieving school districts in western Pennsylvania.

DISTRICT OVERVIEW

District **Composition**

As stated above, the total district enrollment for the 2012-2013 school year was 2,798. There are a total of 182 teachers; making the student to teacher ratio, 15:1. The average teacher experience level exceeds 15 years. The District currently employs approximately 90 Building Administration and support staff, as well as 16 full-time Administrators.

Projected **Enrollment**

PA Department of Education (DOE) Data:
Projected enrollment for the West Jefferson Hills School District indicates a flat trajectory for the Elementary Grades, and a slight decline in student population at the Middle and High Schools, over the next 10 years. The enrollment projection model, instituted by the DOE, is patterned after: current enrollment figures; compared to the previous five years of enrollment; in conjunction with the resident live birth rate (reported by the Pennsylvania Department of Health). Grade progression is determined by calculating retention rates for grades 2 to 12 using the previous 5 years of the District enrollment figures. The model projects trends or patterns regardless of other considerations or external factors. Therefore, if there is a pattern of enrollment projections over the last 5 years, this reduction will be projected to continue. Based on actual enrolment data and observed housing development in the District, we believe this data is flawed. Actual data and observed conditions suggest modest overall growth at the Elementary Level, which will translate to modest overall growth at the Middle and High schools over the next 10 years.

Independent Demographic Impact Study:
West Jefferson Hills School District commissioned an independent professional demographer to complete a demographic study. This study, prepared by Dr. Shelby Stewman Demographics, and completed December 4, 2009, also projected a flat enrollment at the Elementary Level, as well as a slight decline in enrolment at the Middle and High School levels; using three separate scenarios of analysis. Dr. Stewman's study did not anticipate the rapid construction of several housing developments, most prominently, Hunters Field, along West Bruceton Road. While this development was studied, the pace of construction has outraced the projections. Thus, real growth has exceeded projected growth in all years since the Stewman study was completed. In April 2012, the District conducted a minor feeder pattern redistricting to balance the class sizes at the three Elementary Schools. As part of this Master Planning study, the District reviewed the current student population at all District buildings against the recommended maximum capacity for each building, and determined that ALL buildings have the capacity to absorb the adjusted projected growth, if population is balanced through redistricting.

School Building	Current Pop.	Max Capacity
Gill Hall Elementary	282	294
McClellan Elementary	383	441
Jefferson Elementary	564	612
Pleasant Hills Middle	668	756
Thomas Jefferson High (existing)	901	1,008
Total:	2,798	3,111

DISTRICT OVERVIEW

Previous **Building Program**

The West Jefferson Hills School District underwent a large scale building program between 2002 and 2006. The building program consisted of renovations and additions at Gill Hall Elementary School, McClellan Elementary School, and Pleasant Hills Middle School.

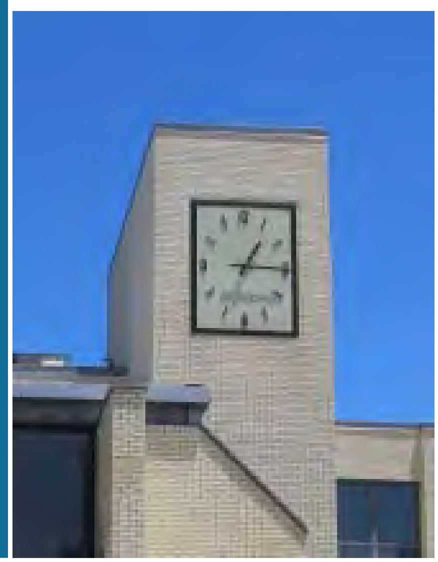
In addition, the District is currently undertaking upgrades in technology systems at the Thomas Jefferson High School, Pleasant Hills Middle School, and Jefferson Elementary School. The District is also currently replacing the roof at Gill Hall Elementary School, and replacing the turf and track at the High School Stadium.

The age and continued degradation of the District's High School facilities, changes in curriculum, and the fact that major systems and components of the existing High School building were not renovated in the last building program, make it necessary for the WJHSD to reevaluate the District physical plant in a District-Wide Feasibility Study; to culminate in a new Master Plan.

West Jefferson Hills School District

Existing Facilities Condition Assessment

JC PIERCE llc

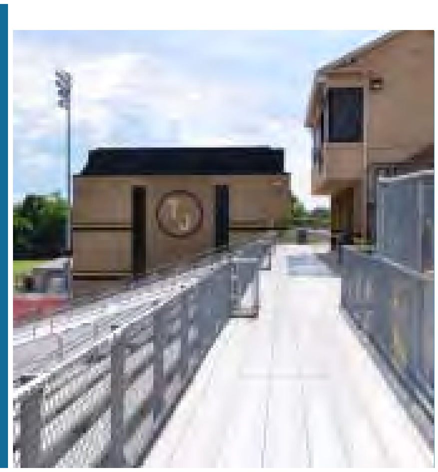


Architecture

Engineering

Strategic Master Planning

Construction Management



August 15, 2013

T A B L E   O F   **C O N T E N T S**

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West Jefferson Hills School District –Master Plan Study

FACILITY EVALUATION REPORT

EXECUTIVE SUMMARY

The West Jefferson Hills School District has asked JC Pierce, llc, Architects and Construction Managers, to help facilitate a District Wide – Master Plan Study. This report contains the analysis of our building review and evaluation of the West Jefferson Hills School District Facilities. The methodology used to evaluate the facilities included on-site visual examination of: the building sites; structural integrity and thermal envelope; Interior environment and finishes; building systems including suitability and life expectancy of mechanical, electrical, plumbing, and telecommunication systems; evaluation of building scheduled spaces; life safety; and compliance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

For more than a month, JC Pierce's architects and consulting engineers, in conjunction with the West Jefferson Hill's, Director of Facilities, custodians, District Administrators and staff, had made visits to the district facilities in an effort to evaluate the condition and viability of each respective building.

The goal of this report is to bring to the Board's attention any issues related to facility conditions that should be addressed in the upcoming building program(s). The report is organized as follows: For each building we have summarized the issues we discovered, and have broken them down into five basic categories:

- **Site Summary**
  - Site Grading and Drainage
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We recognize that due to budgetary constraints it might be impractical and impossible to upgrade all of the remaining facilities in the immediate future. The Board also has other priorities to which to assign its capital improvement dollars. As such, we have prioritized what we believe to be the most critical facility issues. These issues are identified under each school as "Issues of Immediate Concern", and are further prioritized as:

- **High Priority:** Issues that if not addressed pose a significant level of safety hazard, liability, structural failure, or threat to the integrity of the building envelope. Also categorized as "High Priority" are issues that will become more costly to remediate as time passes, as well as issues that could generate a significant cost impact through consequential damage – such as excess moisture that could cause indoor air quality issues.

- **Medium Priority:** Issues that should be addressed because they currently cause the District to incur cost or inconvenience. Also included in this category are issues that have the potential to degrade the condition of the building over time.

If the District does not immediately enter into a capital building campaign; we recommend that the issues identified as "High Priority" are addressed by the District as targeted projects as soon as the budget for this work can be put in place. We recommend that the District evaluate each "Medium Priority" issue on a case-by-case basis to determine the appropriate time to address the concern.

All other issues can be considered Low Priority. These issues relate mostly to interior finishes and programmatic elements. We do not mean to minimize the importance of these issues, as some are quite significant. Given the financial constraints of the District, and the District's other pressing educational and space need priorities, it is our opinion that these issues can be deferred in the short term for the following reasons:

- The cost to remediate these issues will likely not increase beyond the rate of inflation due to further deterioration.
- Continued degradation, or even failure, of the system or component will not likely result in a safety hazard or severe operational inconvenience on the part of the District.
- Aesthetic and related quality-of-life concerns may not require immediate attention.

In our opinion, the above issues should be addressed in conjunction with any future building project associated with each individual facility. It is difficult to prioritize these issues since there are district-wide educational programming decisions that need to be made in conjunction with these facility assessments.

The facility evaluations within this report are intended to be the basis of identifying and prioritizing future building programs. It is expected that the Board of Directors, District Administration, and Other District Stakeholders will be able to use these facility evaluations to better understand the general condition of each respective facility. Detailed cost estimating is not a part of this District Facility Evaluation; rather this report forms the foundation for the magnitude of cost estimating, which are included as part of the District Option(s) portions of this Master-Plan Study. The District Options for the Master Plan Study include the potential cost impact of addressing all of each site's recommended next steps.

THOMAS JEFFERSON HIGH SCHOOL CAMPUS

310 Old Clairton Road
Jefferson Hills, PA 15025
Principal: Mr. Timothy W. Haselhoff
Enrollment: +/- 905

Thomas Jefferson High School, Grades 9-12:

General Condition:

- The High School Building is a large sprawling structure built in 1957.
- The High School had major additions/ alterations performed in 1991. These additions/ alterations encompassed some major building improvements, scheduled space upgrades as well as partial mechanical, electrical, and plumbing upgrades. The major construction included the creation of additional "internal" classrooms through the infilling of the building courtyards; and a substantial addition which houses the cafeteria, kitchen, and second floor library.
- The high school campus is located on an open 31.873.6 acre site; with substantial grade drop-off on all sides..
- The partially three (3) story building sits on the ridge of a hill overlooking the adjacent valley.
- The High School Campus includes two Athletic fields, the High School Stadium, and the District's Tennis Courts.

Site Summary:

- **Safety**
  - Pedestrian/Vehicular Separation – Conflicts are reported along the main driveway through the campus entry.
  - All traffic is routed counter-clockwise around the high school building so that when the school buses cue-up for drop-off and pick-up, the students have direct access to the bus doors; however this causes all incoming and outgoing traffic to crisscross at the driveway entrance.
  - There appears to be poor separation between car and bus traffic.
  - There appears to be fair separation between visitor, staff, and student parking.
  - Security/ reception desk is located at the front door vestibule.
  - There is poor visual connection between the main entrance/ security desk/ main office.
  - Security cameras appear to be strategically placed throughout the High School building.

- **Site Grading and Drainage**
  - The campus for the most part is adequately graded; no large area of poor drainage or water retention was observed.

- **Pavement and Sidewalk Management**
  - Campus-wide, the pavement generally shows minimal evidence of wear and/or weathering damage; requiring only continued maintenance.
  - Some paved areas are starting to show evidence of structural failure; many of the areas have already been repaired with crack sealant; these areas will need to be monitored and repaired as required.
  - The campus paving will require continued monitoring and maintenance.
  - The student lot is in poor condition; it does not appear that the paving of this lot is a high priority.

- **Foundation and Geotechnical Issues**
  - No significant building foundation issues reported or noted to date.

High School Building Summary:

- The building is a predominately three (3) story building with high-bay specialty wings; i.e. Athletic/ Gymnasium and Auditorium/ Music rooms.

- **Exterior Building Evaluation**
  - The building consists of steel frame and masonry bearing construction with brick veneer and Exterior Insulation Finish System (EFIS) siding.
  - Typical fenestration consists of punched masonry openings with steel lintels; most appear to be in fair to poor condition; with some lintels showing significant de-lamination due to rust.

- The building envelope was renovated during the alterations in 1991 and appears to be in fair to poor condition. The masonry veneer is in need of re-pointing and the EFIS is in need of replacement.
- It should be noted that the EFIS system installed on the high school is the original type of EFIS technology which is not a free draining/ cavity veneer like today's EFIS. As a result the High School EFIS coating, over time, has developed impact holes, cracks, and micro fissures which allow moisture and water vapor to readily migrate into the wall system without any way of draining back out. Moisture in the EFIS system can contribute to building decay and potentially causing indoor moisture/ air quality issues.
- The aluminum store front entry systems appear to be in poor condition and in need of replacement.
- The window systems appear to be in poor condition and in need of replacement.
- The aluminum storefront/ panel system at the exterior cafeteria wall is failing and it is in need of replacement. Water infiltration is evident inside the cafeteria.
- The roofing system is predominately a fully-adhered EPDM (Ethylene Propylene Diene Monomer) single-ply rubber membrane system with a portion of ballasted EPDM system over the gymnasium. The EPDM roofing system was installed during the alterations and additions in 1991; and is no longer under warranty. The industry mean life cycle of an adhered EPDM is 12 years; this roof is far beyond its serviceable life and is showing signs of failure/ leaking throughout the building.
- The roof drain strainer/ covers are made of plastic and almost all of them have blown off to the corners of the roof. Therefore the roof drains have no protection from debris which can lead to clogging/ leaking. They should be replaced with cast-iron types that are permanently secured to the roof drain. Although the roof was dry on the day of the inspection, it could be observed that there were large areas of staining which indicates that many of the roof drains are not located at low points to adequately drain the roof. Pictures 23 and 24, page 29.
- There is a large receiving antenna (dish) located on the roof that has not been in use for several years. This should be removed to prevent damage in the event of high winds and deteriorating supports. Picture 19, page 27.
- There is a large truss antenna affixed to the masonry chimney. Several of the guys/stays are damaged/ snapped. The antenna is no longer operational; it is recommended that this be removed to prevent damage in the event of high winds and deteriorating supports. Picture 20, page 27.
- The roof areas of the building have very short parapets, less than a foot in most areas. There are were no fall protection devices observed; and there is equipment (air conditioners, fans) which are located close to the roof edge; this poses a fall hazard to maintenance personnel. Fall protection barriers/ tie-offs should be installed in accordance with the Occupational Safety and Health Administration (OSHA) guidelines. Picture 11, page 23

- **Interior Building Evaluation**
  - The interiors of the building are in generally fair condition and are in need of continued maintenance with the following exceptions:
    - The terrazzo in the corridors is in fair to good condition and should be maintained/ refinished where required.
    - The Vinyl Composition Tile (VCT) and/or carpeting in all of the classrooms are in fair to poor condition and should be replaced.

  - The Acoustical Ceiling Tile System (ACT) in the corridors and in all of the classrooms is discolored, and cupping due to humidity, and should be replaced.
  - The interior doors, frames, and hardware in the corridors, and in all of the classrooms, will be nearing the end of their useful life and should be replaced.
  - The administration office/suite does not have adequate space, and should be reconfigured and upgraded.
  - The classrooms are all in need of updated finishes and programmatic upgrades.
  - The Tech Ed Lab(s) are in need of updated finishes and programmatic upgrades.
  - The Fine/ Commercial Art Lab(s) are in need of updated finishes and programmatic upgrades.
  - The Science Classrooms and Lab(s) are in need of updated finishes and programmatic upgrades.
  - The toilet rooms are in need of updated finishes and fixtures
  - The Computer Lab(s) are in need of updated finishes and programmatic upgrades [Note: the technology backbone was upgraded Summer/ Fall 2012].
  - The Library/ Media Center is in need of updated finishes and programmatic upgrades.
  - The Cafeteria is in need of updated finishes and programmatic upgrades.
  - The Auditorium is in need of updated finishes and programmatic upgrades.
  - The Gymnasium is in need of updated finishes and programmatic upgrades.
  - The Auxiliary Gymnasium is in need of updated finishes and programmatic upgrades.
  - The Locker Rooms are in need of updated finishes and programmatic upgrades.
  - The Wrestling Room is in need of updated finishes and programmatic upgrades.
  - The Weight Room is in need of updated finishes and programmatic upgrades.
  - The Staff resources are all in need of updated finishes and programmatic upgrades.
  - The lockers in the corridors are in fair condition; they will be nearing the end of their useful life and should be replaced.
  - The kitchen is a full-service kitchen; the District does not currently operate a central kitchen; all food products are delivered, stored, prepared, and served at each respective school.

- **Americans with Disabilities Act Accessibility Guidelines (ADAAG)**
  - The building was last renovated prior to the effective date of the ADAAG, and as such, the entrances to the building do not comply with ADAAG.
  - The building is a three (3) story structure with scheduled spaces on all three floors. Access is gained to the first floor and third floor by way of centrally located elevator.

- Several elevation changes occur throughout the building at different areas of each respective floor. Generally these transitions in floor levels do not meet accessible codes. The vertical lifts do not meet current codes; and in one instance the vertical lift has been removed without replacement. Pictures on Pages 60 and 61.
- It would appear that the classroom spaces have the required door clearances and/or hardware.
- Most of the toilet rooms do not comply with ADAAG.
- The audible and visual components of the fire alarm system do not comply with ADAAG or National Fire Protection Association (NFPA) codes.

Mechanical Summary:

- **Heating, Ventilating, and Air Conditioning (HVAC) Systems**
  - The HVAC systems are either original or were part of the 1991 renovation and so, with some exceptions, have been operating for at least twenty (20) years. Typically, HVAC systems have a useful life of twenty (20) years.
  - Of all of the facilities in the district, the High School HVAC system is in the poorest condition due to normal wear and age; although it should be noted that a few, presumably failing units, were replaced around 2007.
  - The only air conditioned spaces are the auditorium, library, computer labs, and interior classrooms (built during the 1991 project) that are in-fills of the original building courtyards; and are without exterior windows.
  - Several of the existing heating and ventilating units are not operated during the school year; except in the wintertime when heat is required. Therefore, they do not bring in the required ventilation air to the respective spaces unless heating is needed. This includes many of the classroom unit ventilators, units on the ground floor, and also the three heating and ventilating units serving the main gymnasium. However, it should be noted that in most instances windows in these spaces are operable; and therefore can be opened to supply the required ventilation.
  - In general, the classrooms are not air-conditioned. Some classrooms have been retrofit with window air-conditioning units. Maintenance personnel reported that there are five large and two small window air conditioning units in various classrooms; which were installed due to medical reasons of the respective occupants. Other classrooms have had temporary fans installed in the window(s) to try to provide some measure of comfort through air motion.
  - Building HVAC controls are the original pneumatic controls. This is an outdated and inefficient system. The miles of pneumatic tubing and connections throughout the building continually leak in inaccessible areas, and the system cannot maintain the required air pressure; as a result the air compressors must repeatedly cycle on/off in order to boost the system pressure. Picture 91, page 63.
  - The condensing unit for fan system S-15 which provides the bulk of the high school's air-conditioning on the first floor interior, only runs at 50% of capacity. One of the two compressors is out of service. It was reported that installation technicians have never been able to get both compressors to operate together. On the day of our inspection with outdoor temperatures in the low 80s, the cooling could only produce air in the mid-60s. Air-conditioned air would normally be in the mid 50s. Picture 17, page 26.

  - The auditorium HVAC system consists of two air handling units, each having 30 tons of air-conditioning capacity. The air handlers are located on a mezzanine space adjacent to the auditorium ceiling; mechanical units of this magnitude should never be in the same space that they are servicing due to the extensive vibration and noise. When operating, the noise of the units is heard throughout the auditorium. As a result, the air handlers are not used during a performance or assembly. The current procedure is to operate the HVAC system prior to an event in order to over cool the space in preparation of the performance/ assembly; turn the system off during the event; and then possible operate the system again during the intermission. Not being able to operate the HVAC during the performance decreases comfort levels and restricts the introduction of outdoor air ventilation required for good health and by building codes.

- **Central Heating Plant**
  - The building is heated by (3) gas fired hot water boilers. Picture 89, page 62.
  - The boilers appear to be original to the building and although old, are fully operational; that said the boilers are beyond their expected life and will need to be replaced, should any capital project be performed on the existing High School Building.
  - One boiler can handle the heating load of the building in all but the coldest weather and never are more than two boilers required.
  - These boilers were recently tested for efficiency, and in spite of their age they operate at between 80 and 82% thermal efficiency, which is good for that period of equipment, but not up to the current efficiency standards.
  - Two smaller zone heating pumps were added in the 1990s. They appear to be in good condition. Picture 90, page 62.
  - There is a lack of sufficient combustion air to the boiler room. The duct looks to be too small and maintenance personnel reported that when two boilers are running, the draft draws combustion air from the building. This is against code as all the combustion air should come directly from the outdoors. For safety, the boiler room should have carbon monoxide detectors installed, and the combustion air quantity should be increased.

- **Cafeteria and Kitchen**
  - The cafeteria and kitchen mechanical equipment have no reported problems.
  - A minor issue is that the cooking area is not cooled to the degree of the dining areas, and while this may not be to the preference of cafeteria workers, it is common practice not to over-cool the kitchen area.
  - The kitchen was originally designed for heavy-duty cooking including frying. However, new dietary policies have eliminated fryers and similar appliances. So while the kitchen equipment is dated, there are no major reported problems and it is adequate for continued use.

- **Exhaust Systems**
  - A majority of the roof exhaust fans and ductwork are badly corroded as seen in the accompanying photographs on pages 22, 24, 25, and 26.
  - Many of the gravity intake vents are rusted and several have become pigeon nesting areas. Some of them have been covered with chicken wire to prevent the

pigeon's access but others are still open. They show signs of droppings and debris indicating they are being used by birds. Picture 15, page 25.

- The exhaust fans from the chemistry lab have been modified, resulting in a convoluted and inefficient ductwork system. All laboratory hoods should be checked to ensure adequate ventilation capture velocity. Picture 9, page 22.
- The Tech-Ed Lab is located on the lower level. There is a dust collection system for the cutting tools. However, there is no general exhaust ventilation system. At one time, exhaust was apparently provided through the paint booth, however, that fan does not exit the building. Picture 54, page 44.
- There are two exhaust fans on the roof that have never been wired and are not operating. One of them reportedly serves the girl's locker room, which results in inadequate ventilation.

Plumbing Summary:

- **Plumbing and Fire Protection Systems**
  - The building Plumbing System was predominately upgraded during the 1991 additions and alterations.
  - A majority of the Plumbing fixtures and/or piping are showing signs of wear.
  - For the most part, the Plumbing equipment has reached the end of its expected service life and will need to be replaced if the building is to remain occupied into the future.
  - There is one domestic hot water boiler for the entire building; which is not in good shape and it will need to be replaced soon. There is much rust deterioration. The Unit is probably original to the building. The hot water produced is stored in large hot water storage tanks. Picture 92, page 63.
  - There are two hot water heating pumps, a primary and a standby pump. Both are 30 hp, one is original to the building, and the other was replaced several years ago. The pumps are "throttled" with a discharge valve to avoid drawing more amperage than the rated capacity of the motors. This is fairly common. However, the use of a discharge valve to throttle the flow results in energy waste. The preferred approach is to trim the impellers to obtain the proper flow or to put the motors on Variable Frequency Drives (VFD).
  - The building is not sprinkled except for a few isolated storage areas that have sprinkler heads fed from the domestic water service. Due to the current building construction and/or building area, any substantial project would require that the building be fully sprinkled and/or compartmentalized with rated fire walls/ separations.

Electrical Summary:

- **Service Entrance**
  - The building electrical systems were updated in 1991. During the 1991 renovation a new 480 volt switchboard was installed in an entrance vault along with a 500kva 208 volt transformer. Picture 96, page 65.
  - The 480/ 277V distribution was extended throughout the school.
  - The 500kva 208 service was then back fed to the original 2500 amp switchboard.

- During this renovation, many of the original panel boards were reused. Picture 95, page 65.
- The power distribution today remains a mixture of several generations of panel boards and equipment.
- Power factor correction payback period should be calculated for the High School.

- **Emergency Power**
  - A 135KW 208/120V, three phase natural gas generator serves life safety and emergency loads.
  - The generator was installed in 1991 and has had no reported maintenance issues.

- **Fire Alarm System**
  - The building is supplied with both a Simplex fire alarm system (hardwired) and with a Guardian fire alarm system. The fire alarm system was updated in 1991 to meet code requirements enforced at that time.
  - It should be noted that the horns and strobes do not meet current National Fire Protection Association (NFPA) or Americans with Disabilities Act Accessibility Guidelines (ADAAG).
  - The term "hardwire" refers to installation methods/wiring methods. The hardwired system is less flexible and would not be employed in a project of this size if installed today.
  - Removal of abandoned fire bells should be considered for the High School.

- **Lighting**
  - Lighting throughout the facility consists of a mixture of fluorescent, metal halide and some original incandescent.
  - The majority of the lighting is lay in ceiling, acrylic diffuser T12 fluorescent fixtures. T12 lamps and ballasts are rapidly being phased out of production.
  - WJHSD site personnel confirmed during the field visit of 5-24-2012 that the T12 lamps have been increasing in price and suppliers have indicated that the T12 may not be available at some point in time.
  - The incandescent fixtures in the auditorium are inefficient, obsolete technology and should be considered for replacement.
  - The library/ media center does not appear to have wall switches for lighting control; instead the breaker panel near the library entrance door has to be opened and specific breakers (identified with magic marker) need to be turned on. This situation does not meet code and it is a health and/or safety violation.

- **Telecommunication/ Technology**
  - Note: Telecommunication and Technology were evaluated as part of a District-Wide Technology Feasibility Study; The District is currently implementing Phase I which upgrades the District Administration Office Building and Thomas Jefferson High School (Appendix).

Issues of Immediate Concern at the Thomas Jefferson High School:

- **High Priority**

Issue No.1:

- The ballasted and fully-adhered EPDM roofing systems are beyond their effective useful life.

Consequence:

- Water infiltration into the buildings can cause superficial damage to interior finishes; prolonged leaking can cause damage to the building structure and create poor indoor air quality concerns.

Recommended Next Step:

- The roofing systems should be replaced as required.

Issue No.2:

- The building envelope is showing signs of deterioration and is contributing to the collection of water in the building interior; both from moisture infiltration and condensation from the "heat sink" effect of the exposed structural system.

Consequence:

- Moisture collection and infiltration of the building interior accelerates the deterioration of the building structure and can contribute to poor indoor air quality.

Recommended Next Step:

- Investigate the causes of the building envelope failures and make the necessary corrections including but not limited to the pointing of bricks, replacement of EFIS, replacement of steel lintels, replacement of windows and storefront systems.

Issue No.3:

- The existing heating system is beyond its serviceable life.

Consequence:

- The heating plant could fail causing a complete shutdown of the building systems.

Recommended Next Step:

- Recommendation for the heating system would be to replace the boiler plant and pumps.

Issue No.4:

- There are a variety of accessibility issues that do not meet with Americans with Disabilities Act Accessibility Guidelines (ADAAG).

Consequence:

- Persons with physical challenges are not provided with equal access to all areas of the building.

Recommended Next Step:

- Perform a comprehensive study to address accessibility and code related deficiencies and make improvements as required.

Issue No.5:

- Building HVAC controls are the original pneumatic controls. The pneumatic controls are beyond their service life expectancy, and should be replaced.

Consequence:

- The pneumatic controls are inefficient and at this age, prone to service breakdowns.

Recommended Next Step:

- Provisions should be made to replace the pneumatic controls in their entirety with full DDC controls; and upgrade to a WEB based HVAC system so that maintenance staff at each school can access units schedule and set points via a laptop computer.

Issue No.6:

- The existing plumbing system is beyond its serviceable life.

Consequence:

- The plumbing system could fail causing a complete shutdown of the building systems.

Recommended Next Step:

- Recommendation for the plumbing system to be replaced in its' entirety.

Issue No.7:

- There is a lack of sufficient combustion air for the boiler room.

Consequence:

- Lack of adequate makeup combustion air poses safety hazards and is against code.

Recommended Next Step:

- Replace/ upgrade the boiler room makeup louvers.

Issue No.8:

- There is a lack of a sufficient exhaust/ ventilation system for the Tech-Ed Lab.

Consequence:

- Lack of adequate exhaust/ ventilation poses safety hazards and is against code.

Recommended Next Step:

- Install proper ventilation and exhaust system in the Tech-Ed Lab.

Issue No.9:

- There is insufficient access/ clearances for much of the HVAC equipment and electrical panels/ equipment throughout the building; which is required for maintenance and/or code.

Consequence:

- Lack of adequate access/ clearances at mechanical equipment and electrical panels/ equipment poses a safety hazard and is against code.

Recommended Next Step:

- Any substantial project at the High School would require creating proper clearances for the mechanical equipment and electrical panels/ equipment.

Issue No.10:

- Most all mechanical/ electric rooms are being used for storage, which includes combustible materials. Mechanical rooms with air handlers, boilers, compressors and other devices should be kept clear of all miscellaneous storage items and only used to store items directly used by the equipment such as air filters, drive belts, and similar items. (IFC Section 315.2.3).

Consequence:

- Storage in any of the mechanical and/or electrical room(s) poses a safety hazard and is against code.

Recommended Next Step:

- Remove storage from the respective mechanical and/or electrical rooms.

Issue No.11:

- The building domestic hot water boiler and storage tank are beyond serviceable life; it is possible that this unit is original to the building. It is reported that the deterioration has caused rust in the water.

Consequence:

- The school cannot operate without hot water; loss of hot water could lead to a temporary shut-down of the building.

Recommended Next Step:

- Replace the building domestic hot water delivery/ storage system.

Issue No.12:

- Most major electrical systems are beyond industry recommended service life, with some major systems approaching three times recommended service life.

Consequence:

- Replacement parts will continue to become more costly to obtain and systems failure can be expected to increase in number. In particular, the T12 lighting will become cost prohibitive to maintain.

Recommended Next Step:

- Replacement/ upgrade of the building electrical system(s).

Issue No.13:

- The electrical distribution system is undersized and at the end of its useful life.

Consequence:

- Low efficiency and increased level of electrical service interruptions.

Recommended Next Step:

- Replace the Electrical Distribution system to meet the current/ future demands.

Issue No.14:

- Existing Panel boards are at the end of their useful life.

Consequence:

- Low efficiency and increased level of electrical service interruptions.

Recommended Next Step:

- Replace the existing panel boards which have not been upgraded.

Issue No.15:

- The fire alarm system does not meet current life safety code.

Consequence:

- In an emergency the building occupants could be at a disadvantage.

Recommended Next Step:

- Replace the fire alarm system to meet current Life Safety Codes.

Issue No.16:

- The Emergency Lighting and [Generator] do not meet current life safety code.

Consequence:

- In an emergency the building occupants could be at a disadvantage.

Recommended Next Step:

- Replace the Emergency Lighting, and Generator to meet the current Life Safety Code.

- **Medium Priority**

Issue No.1:

- There are not adequate parking spots, seating areas or toilet facilities for persons with disabilities. There is not an accessible route between every level of each respective floor.

Consequence:

- Physically challenged persons have difficulty attending classes and/or events.

Recommended Next Step:

- Create additional accessible seating areas; add compliant vertical circulation; and add accessible toilet facilities.

Issue No.2:

- Multiple building entries make a secure facility difficult to maintain.

Consequence:

- The lack of a secure facility encourages deviant and unlawful activity.

Recommended Next Step:

- Implement a student and faculty identification badge program. Institute an improved policy of perimeter campus and building security.

Issue No.3:

- Majority of the roof exhaust fans, ductwork, and gravity intake vents, etc. are rusted and in disrepair. It appears that two exhaust fans have never been wired for operation; which is against code.

Consequence:

- Any associated disrepair with rooftop exhaust fans, ductwork, and gravity intake vents, etc. can lead to building decay and/or health and safety issues due to water infiltration, poor ventilation, or the infestation of the building by pest such as birds, rodents, and/or bats.

Recommended Next Step:

- Replacement or repair of all the exterior rooftop exhaust fans, ductwork, and gravity intake vents, etc.

Issue No.4:

- Exhaust fans from chemistry lab have been modified resulting in a convoluted and inefficient ductwork systems.

Consequence:

- Inefficient and/or modified lab exhaust vents and/or hoods can cause back drafts or not operate to the required capture velocity. Poorly functioning lab exhaust can allow combustion and/or chemically tainted air to remain in the classroom which can pose as a health/safety issue.

Recommended Next Step:

- All laboratory hoods need to be checked and tested to insure proper functioning.

Issue No.5:

- The condensing unit for fan system S-15 which provides the bulk of the high school's air-conditioning on the first floor interior, only runs at 50% of capacity because one of the compressors is out of service.

Consequence:

- The condensing unit working at 50% is inefficient, costs more to operate, can cause premature wear and tear on the mechanical system; and can fail to cool the building as required (particularly during peak demand periods.

Recommended Next Step:

- Evaluation and repair or replacement of the condensing unit.

Issue No.6:

- The auditorium HVAC units reside within the auditorium space.

Consequence:

- Mechanical units of this magnitude cannot be operated during events due to strong vibrations and noise. The lack of conditioning and required ventilation is uncomfortable and poses health/safety issues. The units must be operated during events in order to meet code.

Recommended Next Step:

- Removal, isolation and/or replacement of the auditorium HVAC units.

Issue No.7:

- Automated lighting control was not present. An automated lighting control system should be integrated into future upgrades.

Consequence:

- Currently, without automated lighting controls the building operates inefficiently and does not meet the current energy code.

Recommended Next Step:

- Replacement/ upgrade of the entire building lighting control system(s).

Issue No.8:

- The bleachers in the Gymnasium present ongoing maintenance issues and do not comply with current building codes.

Consequence:

- Continued maintenance and the required modifications as required for code compliance, are cost prohibitive.

Recommended Next Step:

- Replacement of the Gymnasium bleachers is recommended in lieu of renovating the existing bleachers.

- **Low Priority**
  - All remaining issues in this evaluation can be considered to be low priority.

HIGH SCHOOL PHOTOGRAPH EXHIBITS:

HIGH SCHOOL - 1- MAIN ENTRANCE

HIGH SCHOOL - 2 - TYPICAL EXTERIOR

HIGH SCHOOL - 3 - TYPICAL EXTERIOR

HIGH SCHOOL - 4 - TYPICAL EXTERIOR (GYM ENTRANCE)

HIGH SCHOOL - 5 - TYPICAL EXTERIOR

HIGH SCHOOL - 6 - ROOF ACCESS STAIR/ DOOR/ MISSING DOWNSPOUT

HIGH SCHOOL – 7 - TYPICAL ADHERED EPDM ROOF/ EQUIPMENT

HIGH SCHOOL– 8 - TYPICAL ADHERED EPDM ROOF/ EQUIPMENT

HIGH SCHOOL– 9 - TYPICAL ADHERED EPDM ROOF/ RUSTED EQUIPMENT: QUESTIONABLE MODIFICATIONS TO THE SCIENCE LAB EXHAUST HOODS

HIGH SCHOOL– 10 - TYPICAL ADHERED EPDM ROOF/ RUSTED VENTS

HIGH SCHOOL– 11 - TYPICAL ADHERED EPDM ROOF/ EQUIPMENT: NO FALL PROTECTION (TYPICAL)

HIGH SCHOOL– 12 - TYPICAL ADHERED EPDM ROOF/ TEMPORARY CHIMNEY REPAIR

HIGH SCHOOL– 13 - TYPICAL BALALSTED EPDM ROOF/ SKYLIGHTS

HIGH SCHOOL– 14 - TYPICAL BALLASTED EPDM ROOF/ RUSTED VENT

HIGH SCHOOL– 15 - TYPICAL ADHERED EPDM ROOF/ RUSTED VENTS

HIGH SCHOOL– 16 - TYPICAL ADHERED EPDM ROOF/ EQUIPMENT

HIGH SCHOOL– 17 - TYPICAL ADHERED EPDM ROOF/ 50% CAPACITY CONDENSER UNIT

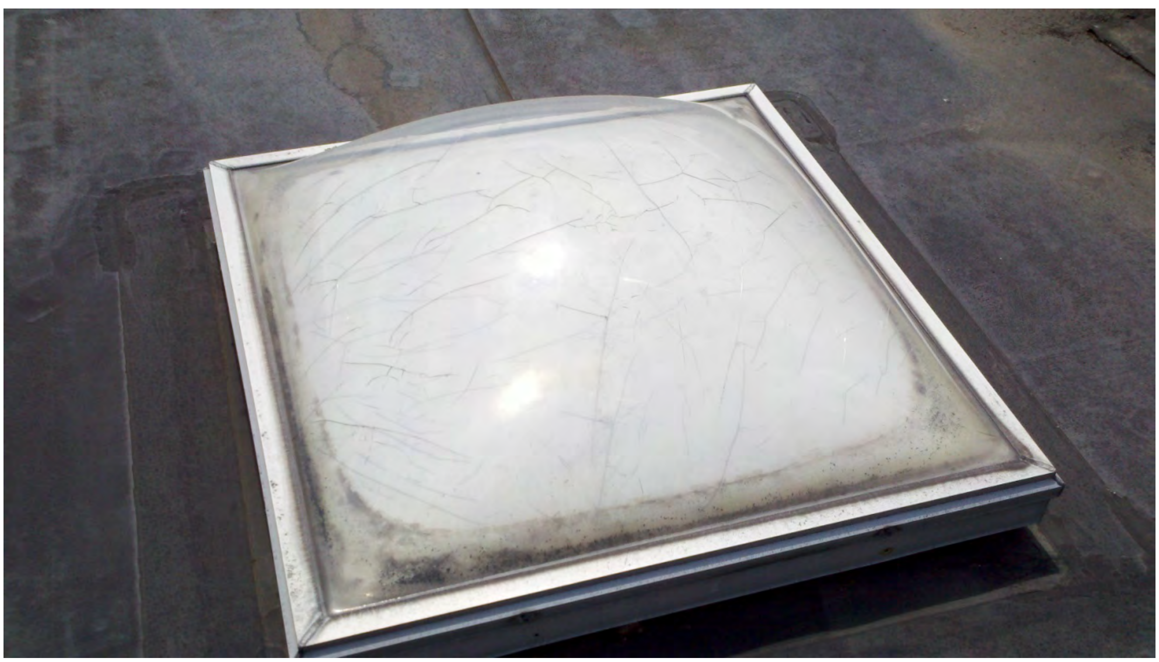
HIGH SCHOOL– 18 - TYPICAL ADHERED EPDM ROOF/ RUSTED EQUIPMENT

HIGH SCHOOL–19 - ABANDONDED SATELITE DISH

HIGH SCHOOL– 20 - ABANDONED ANTENNA

HIGH SCHOOL– 21 - TYPICAL ADHERED EPDM ROOF MEMBRANE FAILURE

HIGH SCHOOL – 22 - TYPICAL CRACKED SKYLIGHT FILLED WITH WATER



HIGH SCHOOL – 23 - TYPICAL ROOF DRAIN WITHOUT REQUIRED STRAINER

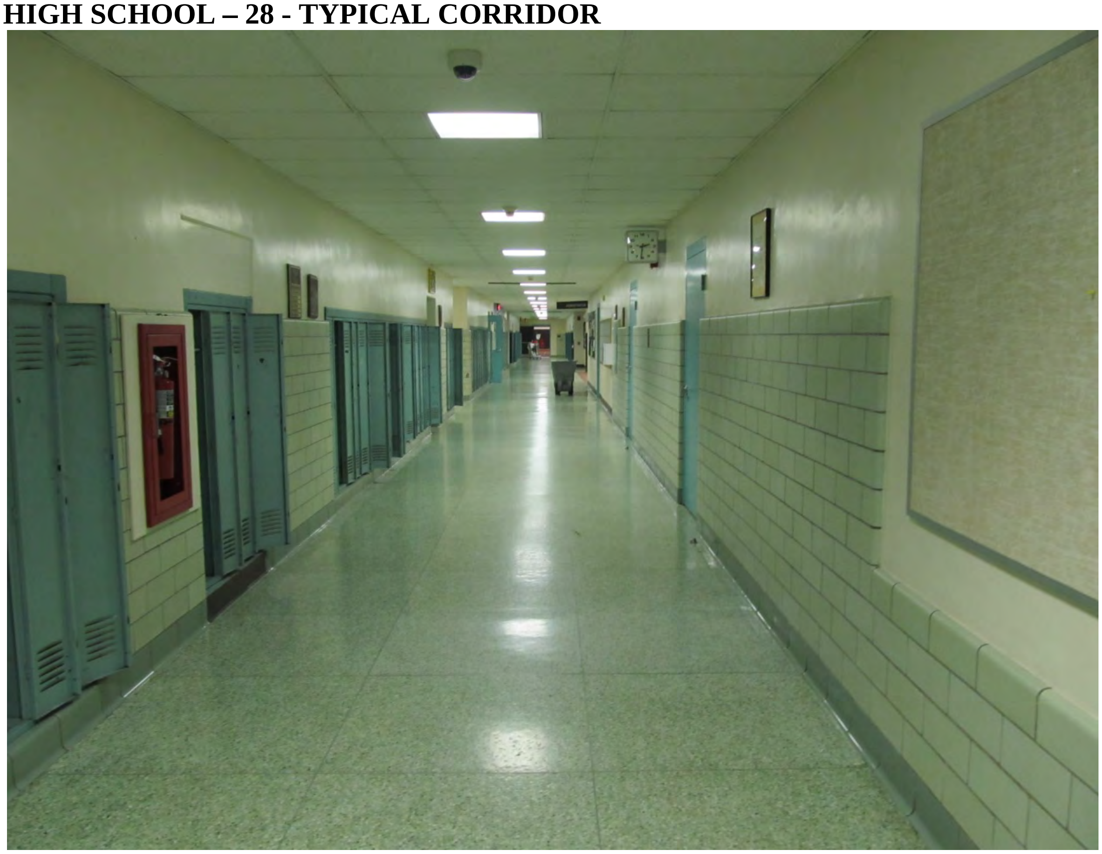
HIGH SCHOOL – 24 - PLASTIC ROOF DRAIN STRAINERS THAT BLEW OFF AND COLLECTED IN A CORNER

HIGH SCHOOL – 25 - MAIN ENTRANCE LOBBY

HIGH SCHOOL – 26 - MAIN OFFICE

HIGH SCHOOL – 27 - MAIN OFFICE

HIGH SCHOOL – 28 - TYPICAL CORRIDOR



HIGH SCHOOL – 29 - TYPICAL CORRIDOR

HIGH SCHOOL – 30 - TYPICAL CORRIDOR

HIGH SCHOOL – 31 - TYPICAL CLASSROOM

HIGH SCHOOL – 32 - TYPICAL CLASSROOM

HIGH SCHOOL – 33 - TYPICAL COMPUTER LAB

HIGH SCHOOL – 34 - TYPICAL COMPUTER LAB

HIGH SCHOOL – 35 - TYPICAL SCIENCE LAB

HIGH SCHOOL – 36 - TYPICAL SCIENCE LAB

HIGH SCHOOL – 37 - SCIENCE LAB: STAIRS TO GREENHOUSE

HIGH SCHOOL – 38 - SCIENCE LAB: TYPICAL GREENHOUSE

HIGH SCHOOL – 39 - RAMP TO LARGE GROUP INSTRUCTION (LGI)

HIGH SCHOOL – 40 - LARGE GROUP INSTRUCTION (LGI)

HIGH SCHOOL – 41 - ORCHESTRA/ BAND ROOM

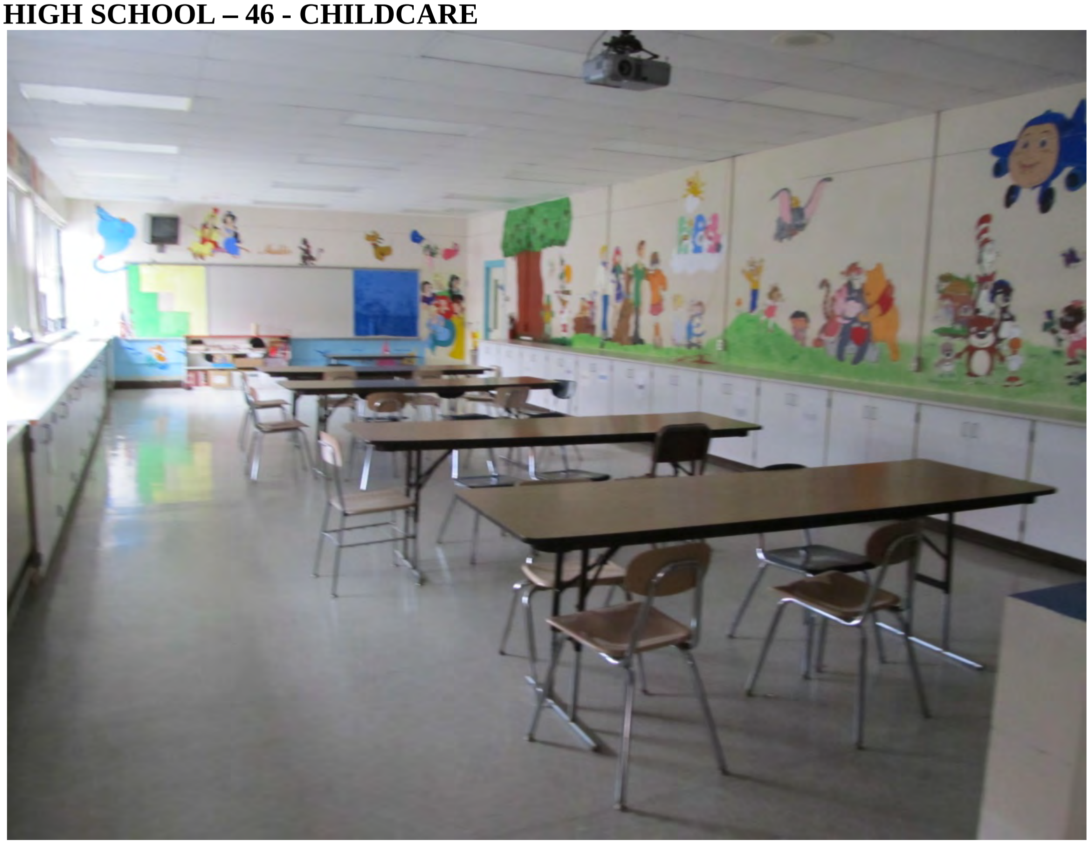
HIGH SCHOOL – 42 - ORCHESTRA/ BAND ROOM

HIGH SCHOOL – 43 - FAMILY CONSUMER SCIENCE

HIGH SCHOOL – 44 - FAMILY CONSUMER SCIENCE

HIGH SCHOOL – 45 - SEWING LAB

HIGH SCHOOL – 46 - CHILDCARE



HIGH SCHOOL – 47 - ART ROOM

HIGH SCHOOL – 48 - ART ROOM

HIGH SCHOOL – 49 - ART ROOM

HIGH SCHOOL - 50 - KILN

HIGH SCHOOL – 51 - TECHNICAL EDUCATION LAB

HIGH SCHOOL – 52 - TECHNICAL EDUCATION LAB

HIGH SCHOOL – 53 - TECHNICAL EDUCATION LAB

HIGH SCHOOL – 54 - TECHINCAL EDUCATION LAB; NOTE THAT THE PAINT BOOTH DOES NOT CONNECT TO THE EXTERIOR FOR VENTING

HIGH SCHOOL – 55 - LIBRARY/ MEDIA CENTER LOBBY

HIGH SCHOOL – 56 - LIBRARY/ MEDIA CENTER LOBBY

HIGH SCHOOL- 57 - LIBRARY/ MEDIA CENTER

HIGH SCHOOL – 58 - LIBRARY/ MEDIA CENTER

HIGH SCHOOL – 59 - LIBRARY/ MEDIA CENTER

HIGH SCHOOL – 60 - LIBRARY/ MEDIA CENTER; BREAKER PANEL BOARD THAT IS USED IN LIEU OF WALL LIGHT SWITCHES

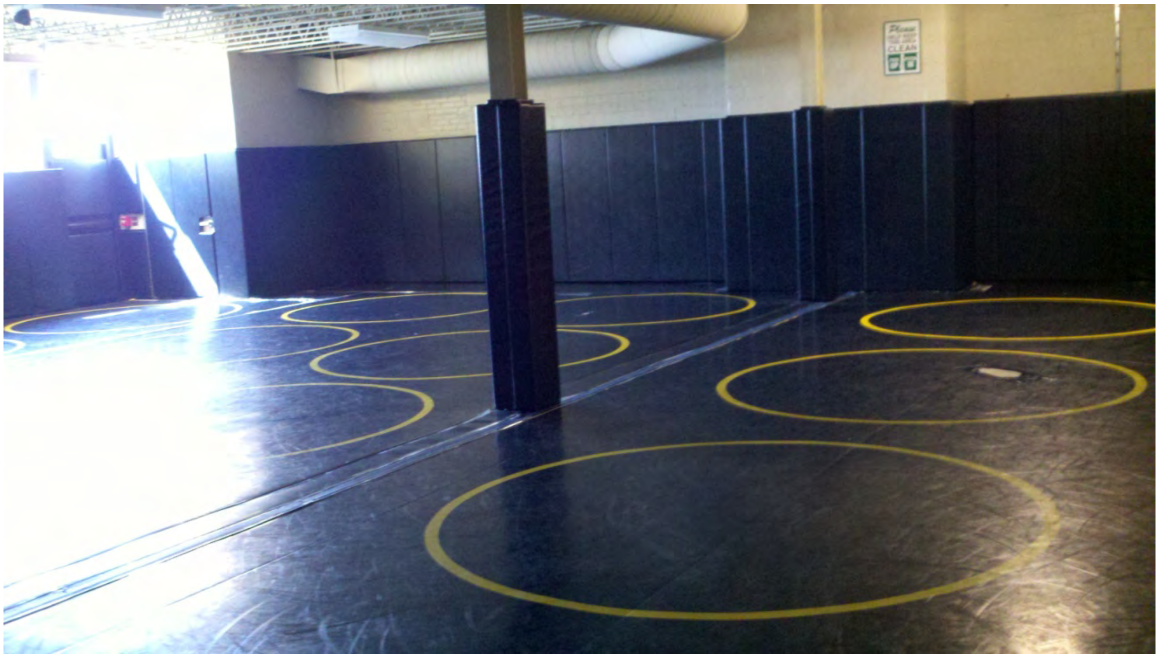
HIGH SCHOOL - 61 - GYMNASIUM

HIGH SCHOOL - 62 - GYMNASIUM

HIGH SCHOOL – 63 - AUXILLARY GYM

HIGH SCHOOL – 64 - AUXILLARY GYM

HIGH SCHOOL – 65 - WRESTLING ROOM



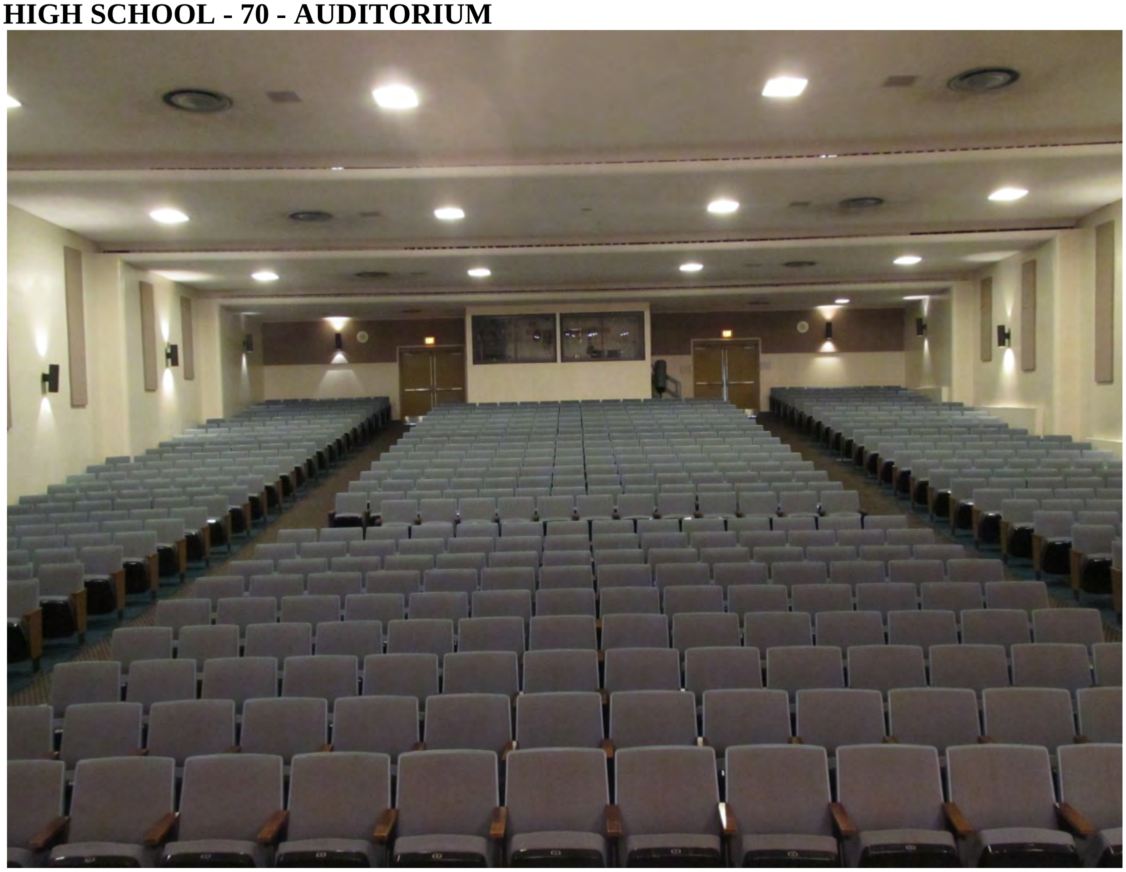
HIGH SCHOOL – 66 - WRESTLING ROOM

HIGH SCHOOL – 67 - AUDITORIUM LOBBY

HIGH SCHOOL - 68 - AUDITORIUM

HIGH SCHOOL - 69 - AUDITORIUM

HIGH SCHOOL - 70 - AUDITORIUM



HIGH SCHOOL - 71 - CAFETERIA

HIGH SCHOOL - 72 - CAFETERIA

HIGH SCHOOL – 73 - SERVING LINE

HIGH SCHOOL – 74 - SERVING LINE

HIGH SCHOOL - 75 - KITCHEN

HIGH SCHOOL - 76 - KITCHEN

HIGH SCHOOL - 77 - KITCHEN

HIGH SCHOOL - 78 - DISHWASHING

HIGH SCHOOL –79 - TYPICAL TOILET ROOM

HIGH SCHOOL – 80 - TYPICAL TOILET ROOM

HIGH SCHOOL – 81 - TYPICAL ELECTRIC WATER COOLER

HIGH SCHOOL – 82 - ELEVATOR

HIGH SCHOOL – 83 - TYPICAL NON-COMPLIANT STAIR RAIL

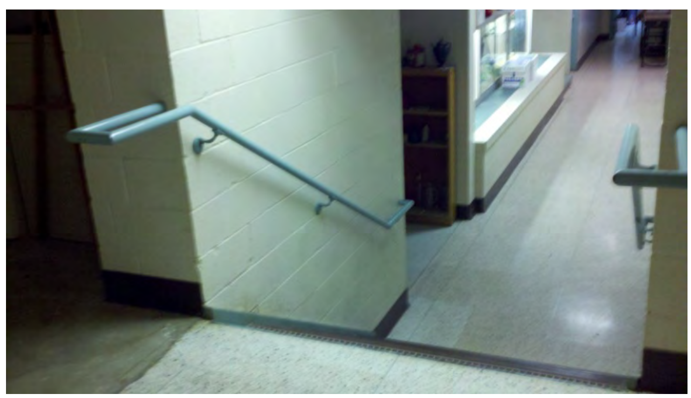
HIGH SCHOOL – 84 - TYPICAL NON-COMPLIANT STAIR RAIL

HIGH SCHOOL – 85 - MISSING VERTICAL LIFT

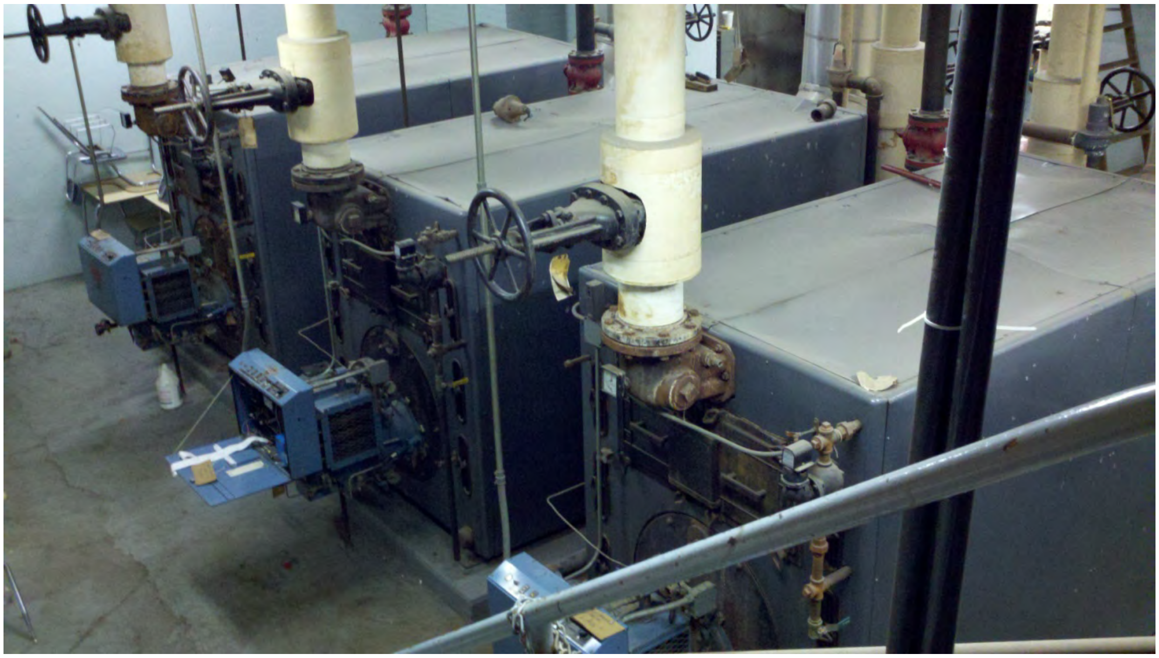
HIGH SCHOOL – 86 - THIRD FLOOR CORRIDOR STAIRS (NO RAMP)

HIGH SCHOOL – 87 - THIRD FLOOR CORRIDOR RAMP & ACCESSIBLE RAMP

HIGH SCHOOL – 88 - STAIRS AND NON-COMPLAINT LIFT TO ART WING

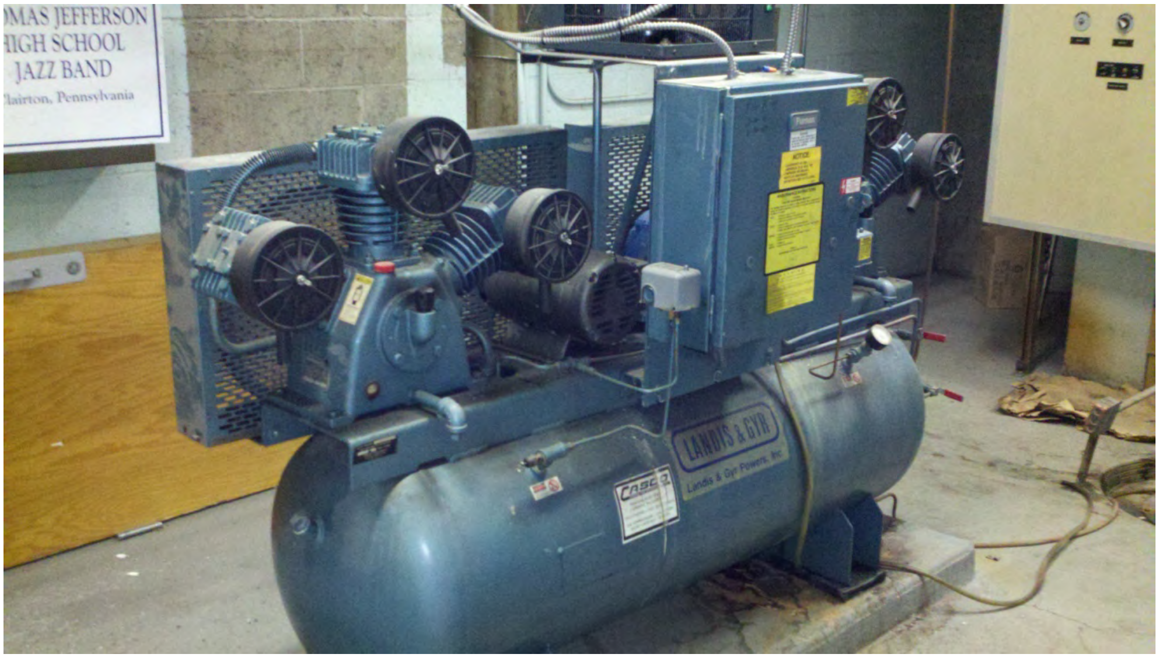


HIGH SCHOOL – 89 - BOILERS

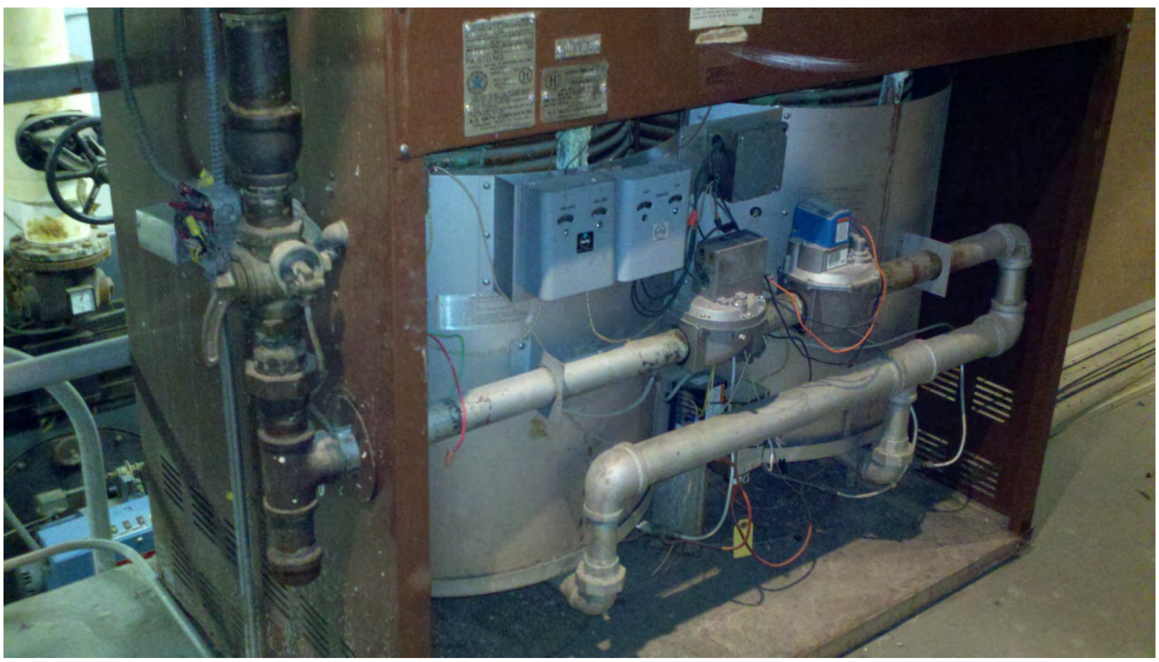


HIGH SCHOOL – 90 - HEATING PUMPS

HIGH SCHOOL – 91 - PNUEMATIC CONTROLS COMPRESSOR



HIGH SCHOOL – 92 - DOMESTIC HOT WATER BOILER

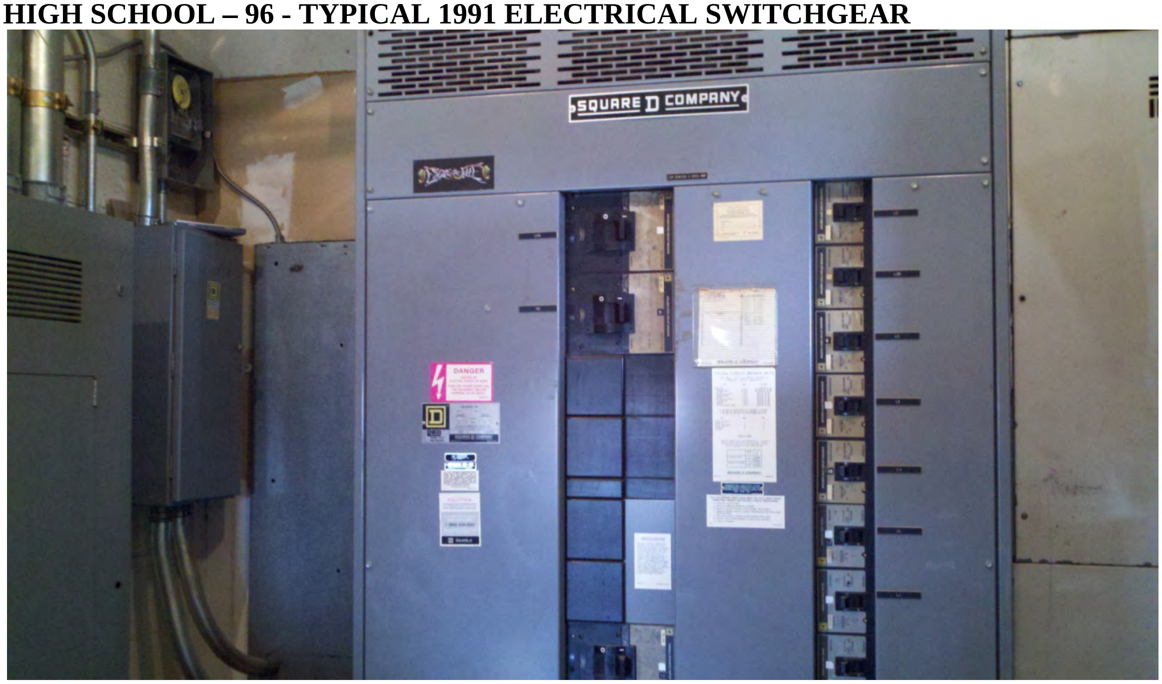


HIGH SCHOOL – 93 - TYPICAL AIR HANDLING UNIT

HIGH SCHOOL – 94 - BASEMENT OVERHEAD PIPING AND NON-COMPLIANT FLEXIBLE EXHAUST DUCT

HIGH SCHOOL – 95 - TYPICAL ORIGINAL ELECTRICAL SWITCHGEAR

HIGH SCHOOL – 96 - TYPICAL 1991 ELECTRICAL SWITCHGEAR

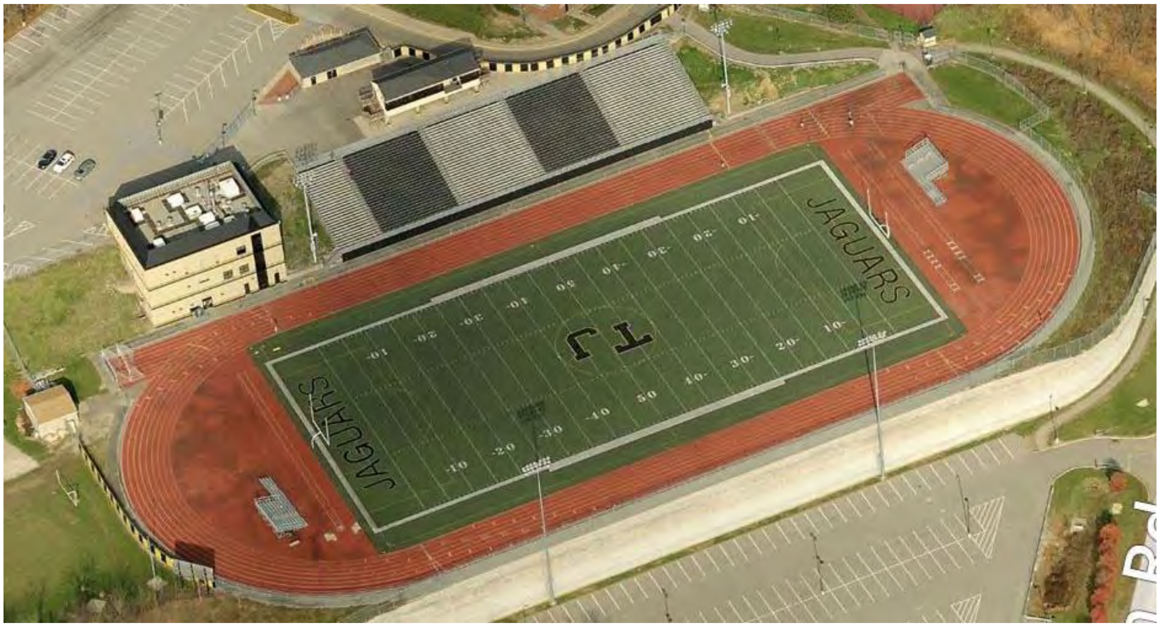


HIGH SCHOOL – 97 - WATER SERVICE

HIGH SCHOOL – 98 - GAS SERVICE

THOMAS JEFFERSON STADIUM:
Field House, Press Box, and Concession Stand

310 Old Clairton Road
Jefferson Hills, PA 15025



<u>Thomas Jefferson Stadium:</u>

- **General Condition**
  - It is believed that the stadium facility was constructed in the 1960's with subsequent additions and alterations over the years which included but was not limited to bleachers, turf, drainage, lighting, track and field surfaces, locker and toilet room facilities, concessions, press box, etc.
  - The field is located adjacent to the High School Campus and shares a paved student lot with the High School Campus.
  - The most recent additions and alterations to the stadium occurred in 2002 (lighting, turf, track, field house, and support facilities).
  - The Stadium seating capacity is approximately 4,000.

- **Site Evaluation**
  - The stadium is situated on a cut/ fill bench created on the hillside below the High School campus. During the alterations and additions in 2002 the track was increased to eight (8) running lanes which necessitated the need for a substantial retaining wall on the downhill side of the stadium.

- **Field Evaluation**
  - Typically football/ soccer fields are oriented North/ South in order to avoid conflicts with the East/ West trajectory of the sun; the East /West orientation of the stadium field can limit playability during day games.
  - The playing surface is artificial turf manufactured by Field*Turf*. The turf material is a "tape" system which consists of polyethylene/polypropylene tape fibers tufted into a

carpet like backing. The turf type is what is now marketed as "Field*Turf* Classic" to differentiate from the new "Field*Turf* Mono*Grass*"

- The artificial turf was installed during alterations to the stadium in 2002; and was revitalized through "deep grooming" to reverse compaction in the summers of 2011 and 2012.
- The artificial turf has permanent markings for football ten (10) yardage lines, numbers, football hash marks, and end zone graphics; soccer lines are also inlaid; lines for other activities such as lacrosse must be painted with temporary paints designed specifically for use with artificial turf.
- The artificial turf system is ready for replacement, pending decisions made regarding other priorities as noted in this study. [Turf replaced Summer 2013]
- It is estimated that on an annual basis the field serves as a host to a minimum of 70-80 activities or events.

- **Field/ Site Lighting Evaluation**
  - Field Lighting was upgraded in 2002 and appears to be in good condition; it has been reported that the field lighting is adequate for night games.
  - Site/ security lighting surrounding the stadium proper, grandstand lighting, and concession/ toilet areas appear to be well illuminated.
  - Emergency back-up lighting circuits for the stadium were not observed.

- **Track Evaluation**
  - The running surface is a synthetic rubberized wearing course on an asphalt base that was installed in 2002.
  - The track appears to be set up as a 400m, 8 lane, equal-quadrant track.
  - The track material is approaching the end of its useful life and will need to be resurfaced in the next few years. Several areas of the track surface have had to be cut out and replaced due to unsafe conditions. ~~The track should be replaced at the same time that the synthetic turf is replaced.~~ [Spring/ Summer 2013 it was determined that there were sub-surface water infiltration issues causing the track surface to delaminate and blister off of the asphalt base; therefore track replacement has been deferred to the Summer of 2014 in order to determine the cause and then mitigate the sub-surface water as part of the resurfacing project.].
  - WPIAL guidelines will only allow track and field events at stadiums with a minimum of 8 lanes with equal quadrants.

- **Home/ Visitors' Grandstand Bleacher Evaluation**
  - The grandstand bleachers are aluminum plank benches mounted on a steel super-structure.
  - The grandstand bleachers are a fully enclosed aluminum plank system on a rising structural steel substructure resting on poured concrete footers. In general the bleachers are in good condition and are only in need of continued maintenance.
  - The bleachers, stairs, seating areas, and guardrails/ railings appear to meet current codes and guidelines.
  - In general the railing systems for the bleachers meet current code.
  - It would appear that the width and quantity of the aisle ways are acceptable under the new state wide building code. The length of the bleacher sections also appears to meet code.
  - The Home and Visiting patrons are divided/ separated into specific seating sections on the same set of bleachers. There are no bleacher/ seating areas on the far side of the field.
  - It appears as though the seating for the marching band(s) is located on smaller bleachers in each D-zone.

- **Score Board Evaluation**
  - The Score Board appears to be well maintained and is in good condition.

- **Concessions, Ticket Windows, and Press Box Evaluation**
  - The concessions and ticket windows are located in a separate building at the top of the bleachers.
  - The concession/ticket building was part of the 2002 project and appears to be in good condition.
  - The Press box is elevated and is located at the top of the grandstands overlooking the field.
  - The press box is not accessible to persons with disabilities. Two (2) treated lumber stairs bookend the press box. It should be noted that the treated lumber support post for the stairs are simply set on top of what appears to be poured concrete footers. The stair structure appears to be completely freestanding; the stairs should be anchored into the ground and be braced to the press box structure. In addition, the wood post should not be set directly on the concrete; ground moisture and salt from winter maintenance will contribute to premature decay of the support posts. Pictures 9 and 10, Page 79.

- **Field House Evaluation**
  - The field house was built during the 2002 construction project; it houses public toilet rooms, team locker rooms, team rooms, training rooms, and offices/ conference rooms for the coaches.
  - Water infiltration has been observed in the basement/ stair tower walls.
  - Minor structural and curtain wall repairs occurred in the summer of 2011.

- **Toilet Room Evaluation**
  - The public toilet rooms are located in the field house with separate Women and Men facilities.
  - It appears that the toilet fixture counts are greater than what would normally be required for the grandstand capacity per the Allegheny Plumbing Code, Stadium exception, which was implemented in 2000.

- **Parking Lot Evaluation**
  - The parking is located at the paved lots surrounding the High School and below the track/field retaining wall. Parking is insufficient for games/events. For football games, parking overflows onto neighboring roads.

- **Americans with Disabilities Act Accessibility Guidelines (ADAAG)**
  - There appear to be adequate toilet facilities for persons with disabilities.
  - There appears to be adequate seating areas for persons with disabilities for the capacity of the stadium.

- **Softball Field Evaluation**
  - The competition softball field is adjacent to the stadium track and field.
  - The playing surface appears to be well graded and in playing condition.
  - The team dugouts are in good condition.
  - The spectator bleachers appear to be in fair to good condition; and appear to meet current codes.

Mechanical Summary:

- **Heating, Ventilating, and Air Conditioning (HVAC) Systems**
  - The HVAC equipment for the Field House, Press Box, and Concession Stand were all installed in 2002 and will be approaching the end of their service life in the next 10 to 15 years; at which time the equipment will likely need to be replaced.
  - The current HVAC controls for the Field House, Press Box, and Concession Stand should be upgraded to a web based HVAC system so that maintenance staff at each school can access units schedule and set points via a laptop computer.

- **Central Heating Plant**
  - The Field House is heated by gas fired DX Rooftop Units which were installed in 2002 and are in good condition.
  - The Press Box and Concession Stand are heated with small packaged unit heaters which were installed in 2002 and appear to be in good condition.

- **Exhaust Systems**
  - Exhaust fans for the Field House, Press Box, and Concession Stand were installed/ replaced in 2002. All fans are operational and working as intended.
  - The Concession Stand appears to only be ventilated by a single through-wall exhaust fan, which is operated by a wall timer switch. During the inspection, it was observed that the heat gain from the Concession Stand refrigerators and freezers, coupled with the summer heat, resulted in a high ambient temperature inside the Concession Stand. While no one is normally in the space during the summer, high temperatures will affect the efficiency and longevity of the refrigerators and freezers, condensing unit system. It is suggested that the wall timer controller for the exhaust fan be replaced by a thermostatically controlled switch that could automatically turn on/off according to the ambient temperature. Picture 14, Page 81.

Plumbing Summary:

- **Plumbing and Fire Protection Systems**
  - The plumbing systems for the Field House, Press Box, and Concession Stand were installed/ replaced in 2002. All plumbing fixtures are in good condition.
  - Recommendation for the Plumbing System would be to leave as is for the next 15 to 20 years at which time it will be reaching the end of its service life, and need to be replaced.

Electrical Summary:

- **Service Entrance**
  - The stadium buildings are newly constructed. The Field House has a 1200 amp main service at 120/208V and the Concession Stand has a 1600 amp service at 120/208V. It appears as though the Press Box is feed by the Concession Stand through a branch circuit.

- **Emergency Power**
  - Internal egress lighting for the Field House, Press Box, and Concession Stand is provided via battery packs and battery ballasts.
  - There did not appear to be any exterior stadium emergency lighting.

- **Fire Alarm System**
  - The Field House, Press Box, and Concession Stand are monitored by a combined burglar / fire system as manufactured by Guardian systems.

- **Lighting**
  - Lighting throughout the facility is primarily fluorescent. The lamp types are mostly the T8 style; the remaining lighting is generally compact florescent cans and fixtures.

- **Telecommunication/ Technology**
  - Note: Telecommunication and Technology were evaluated as part of a District-Wide Technology Feasibility Study; The District is currently implementing Phase I which upgrades the District Administration Office Building and Thomas Jefferson High School (Appendix).

Issues of Immediate Concern at the Thomas Jefferson Stadium:

- **High Priority**

Issue No.1:

- There is visible water infiltration along the walls of the Field House basement/ stairs.

Consequence:

- Ongoing water infiltration can lead to potential health issues (potential for mold) and possible structural damage.

Recommended Next Step:

- Monitor water infiltration as required to determine the source and to address/resolve the issue accordingly.

Issue No.2:

- The Press Box Technology Systems are outdated.

Consequence:

- The outdated Technology Systems result in limitations to performance and function.

Recommended Next Step:

- Telecommunication and Technology were evaluated as part of a District-Wide Technology Feasibility Study; The District is currently implementing Phase I which upgrades the District Administration Office Building and Thomas Jefferson High School (Appendix). [Note: Fiber optic cable was extended from the High School during the summer of 2012 technology project].

Issue No.3:

- Open circuit breaker slots were observed in unlocked circuit panel boxes in the Press Box.

Consequence:

- Where electrical circuit breakers are not installed and the factory metal blank has been removed, a hazard exists due to the exposed bus work.

Recommended Next Step:

- Blank inserts should be installed anywhere a circuit panel has open spaces

Issue No.4:

- The main electrical service at the field house is installed in a "tight" space.

Consequence:

- When proper clearances are not maintained, any required maintenance can be hazardous to perform.

Recommended Next Step:

- Procedures should be established for servicing this area. No maintenance equipment should be stored in front of electrical panels (in general).

Issue No.5:

- The Press Box stair's treated wood support posts are not anchored into the ground and sit flush with the concrete. The stairs are not anchored at the top to the Press Box.

Consequence:

- Without proper anchoring, the stairs can be unstable; ground moisture and salt from winter maintenance will contribute to the premature decay of the wooden support posts.

Recommended Next Step:

- Retrofit the stair post with the proper raised anchors; mechanically fasten and anchor the upper portion of the stairs to the Press Box.

- **Medium Priority**

~~**Issue No.1:**~~ [Note: Turf was replaced the Summer of 2013.]

- ~~The Artificial Turf System is showing signs of deterioration from normal wear over its ten years of use.~~

~~**Consequence:**~~

- ~~Continued deterioration of the Artificial Turf System has the potential to become a safety concern for student athletes.~~

~~**Recommended Next Step:**~~

- ~~Replacement of the Artificial Turf System is recommended, pending decisions made regarding other priorities as noted in this study.~~

Issue No.2:

- The Synthetic Running Track Surface is showing signs of deterioration from normal wear over its ten years of use. It has been determined that there is sub-surface water infiltrating the asphalt base.

Consequence:

- Continued deterioration of the Synthetic Running Track Surface has the potential to become a safety concern for student athletes. Water infiltration into the sub-base causes the track to delaminate/ blister from the asphalt base.

Recommended Next Step:

- Investigation into the sub-base water infiltration is required; once the water infiltration is remediated; the asphalt base should be repaired and new running track surface installed. [Remediation of sub-base water infiltration and track replacement scheduled for Summer 2014].

Issue No.3:

- The perimeter drainage system around the Track/Field is in need of improvements.

Consequence:

- A proper perimeter drainage system is essential in the performance and maintenance of the Track/Field conditions.

Recommended Next Step:

- A complete evaluation of the perimeter drainage system is required to determine the necessary improvements, and should be performed in conjunction with replacement of the Synthetic Running Track Surface, pending decisions made regarding other priorities as noted in this study.

Issue No.4:

- When the concession building is closed but the internal food and beverage cooler/ freezers are in operation, the equipment heat rejection raises the internal ambient temperature to excessive levels; particularly on hot summer days. There is an existing small exhaust fan but no corresponding makeup air louver so the fan is not very effective. The fan is also on a spring-wound hand timer.

Consequence:

- A high internal temperature decreases the food and beverage cooler/ freezer's efficiency and will eventually shorten their equipment life.

Recommended Next Step:

- Install a large makeup air louver and motorized damper. Place the existing exhaust fan and motorized damper on a thermostat set at approximately 80 deg. This will automatically run the ventilation whenever internal ambient temperature rises.

- **Low Priority**

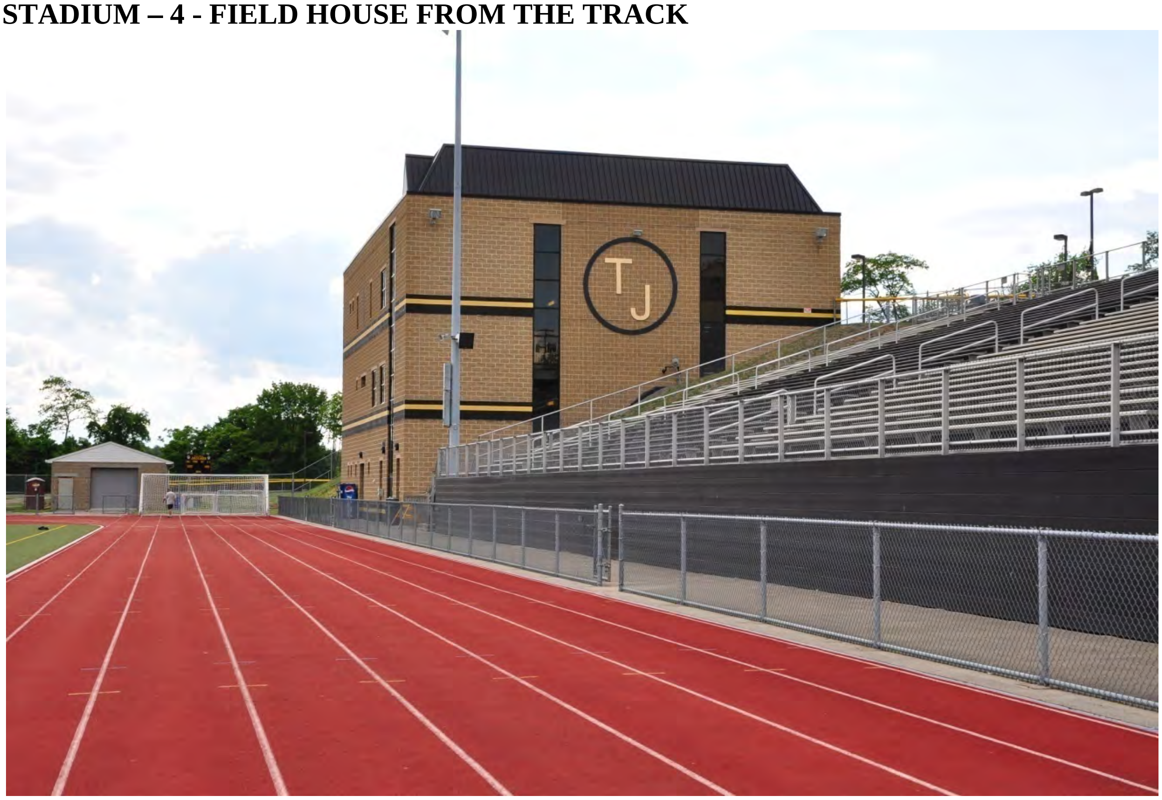
  - All remaining issues in this evaluation can be considered to be low priority.

STADIUM – 1 - MAIN ENTRANCE

STADIUM – 2 - CONCESSION STAND AND UPPER CONCOURSE

STADIUM – 3 - FIELD HOUSE UPPER LEVEL

STADIUM – 4 - FIELD HOUSE FROM THE TRACK



STADIUM - 5 - GRANDSTAND

STADIUM - 6 - GRANDSTAND

STADIUM - 7 - PRESSBOX

STADIUM - 8 - PRESSBOX

STADIUM – 9 - PRESSBOX FREE STANDING TREATED LUMBER STAIRS

STADIUM – 10 - PRESSBOX STAIR POST SITTING DIRECTLY ON CONCRETE

STADIUM - 11 - PRESSBOX INTERIOR

STADIUM - 12 - PRESSBOX INTERIOR

STADIUM - 13 - CONCESSION STAND EXTERIOR

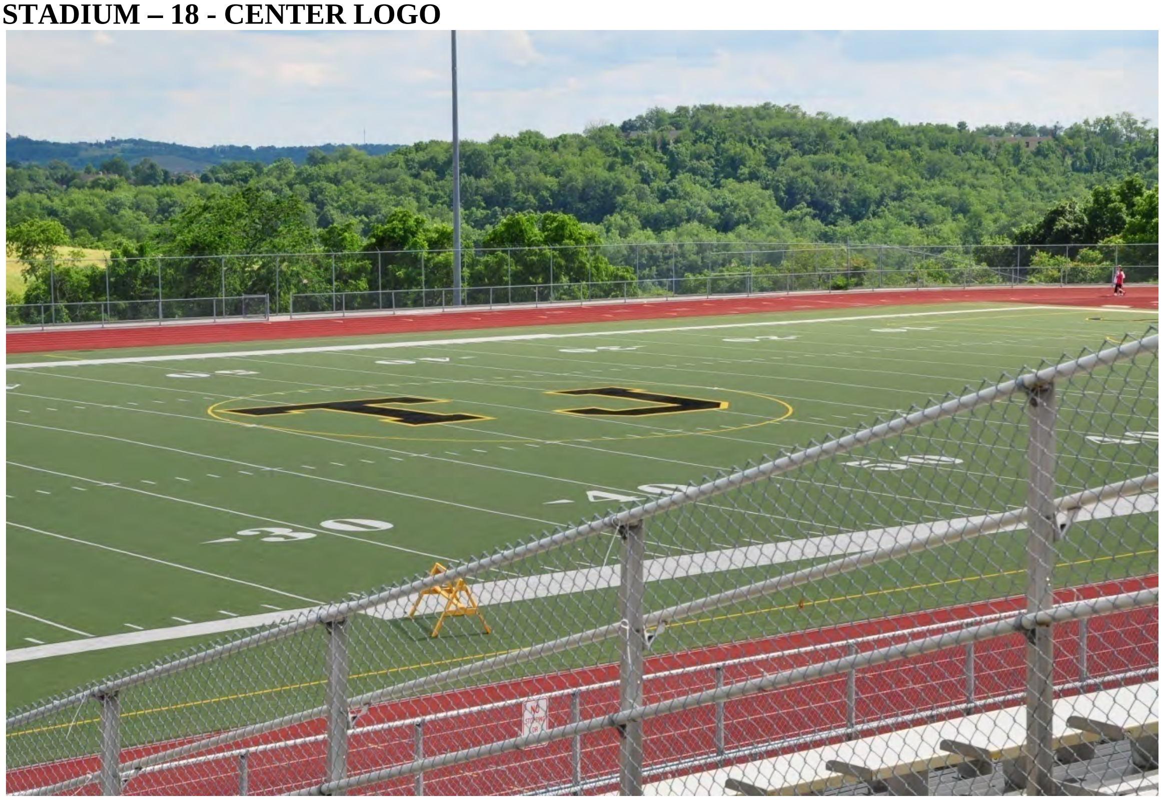
STADIUM - 14 - CONCESSION STAND INTERIOR

STADIUM – 15 - VIEW FROM THE FIELD

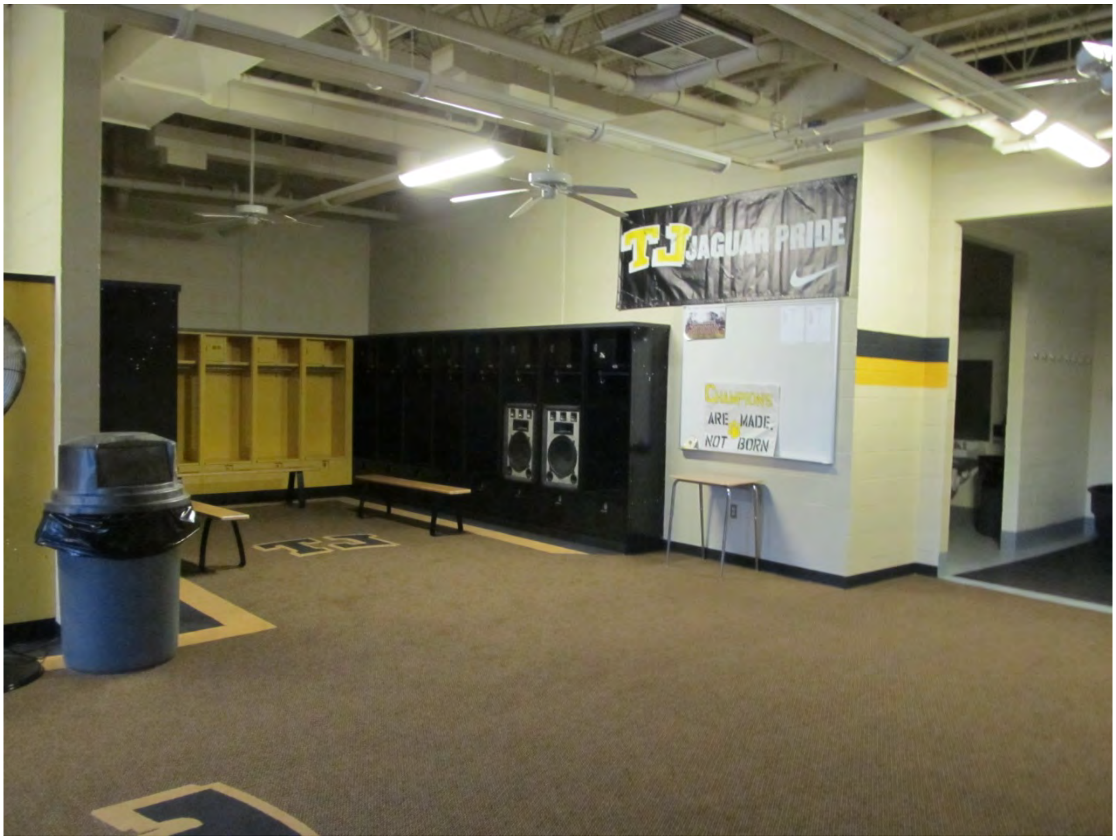
STADIUM – 16 - ENDZONE GRAPHICS

STADIUM - 17 - SCOREBOARD

STADIUM – 18 - CENTER LOGO



STADIUM - 19 - FIELD HOUSE TYPICAL TEAM ROOM



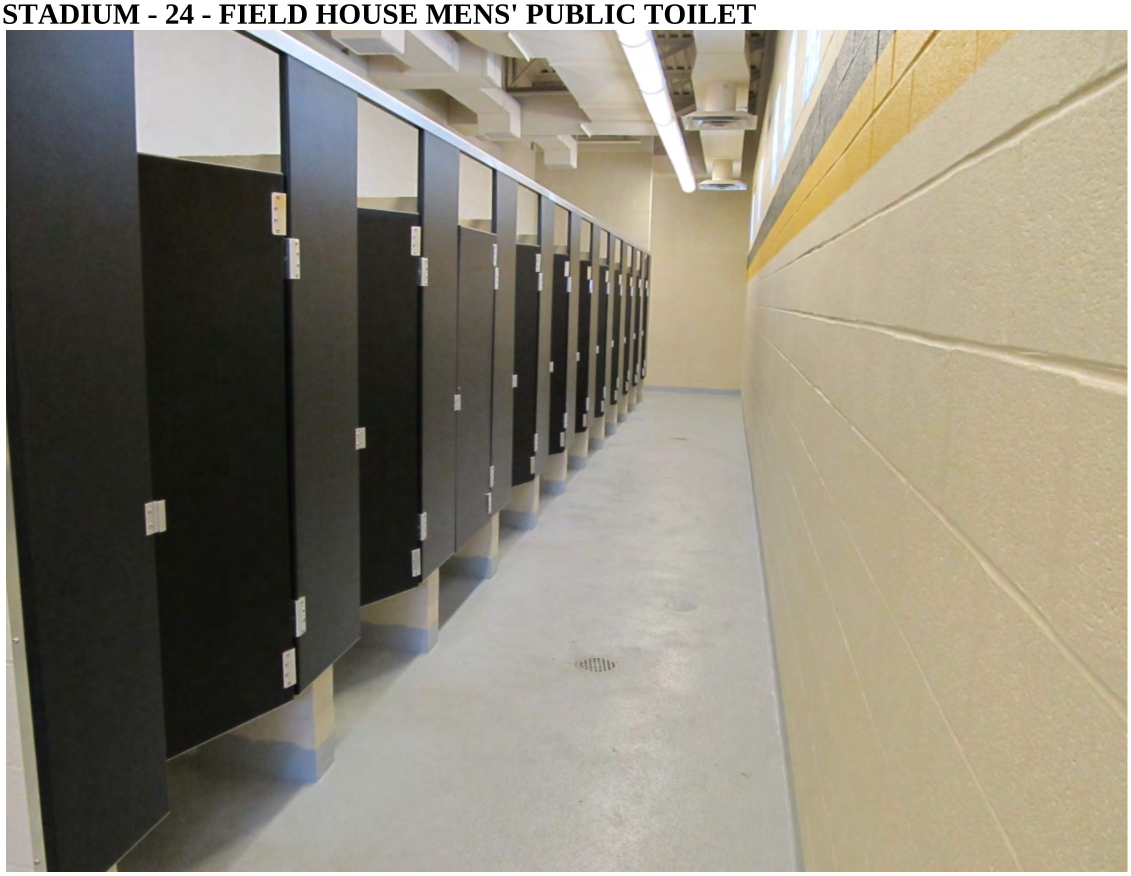
STADIUM - 20 - FIELD HOUSE TYPICAL TEAM ROOM

STADIUM - 21 - FIELD HOUSE TEAM TOILET ROOM

STADIUM - 22 - FIELD HOUSE TEAM SHOWERS

STADIUM - 23 - FIELD HOUSE MEN'S PUBLIC TOILET

STADIUM - 24 - FIELD HOUSE MENS' PUBLIC TOILET



STADIUM - 25 - FIELD HOUSE WOMENS' PUBLIC TOILET

STADIUM - 26 - FIELD HOUSE TYPICAL PUBLIC LAVITORIES

STADIUM - 27 - FIELD HOUSE PRESSBOX TOILET ROOM

STADIUM - 28 - FIELD HOUSE PRESSBOX TOILET ROOM

STADIUM - 29 - FIELD HOUSE TYPICAL DOMESTIC HOTWATER BOILER

STADIUM - 30 - FIELD HOUSE ZERO DOOR CLEARANCE AT ONE OF THE BOILER PIPES

STADIUM - 31 - FIELD HOUSE TWO-PLY MODIFIED ROOFING AND EQUIPMENT

STADIUM - 32 - FIELD HOUSE TWO-PLY MODIFIED ROOFING AND EQUIPMENT

STADIUM - 33 - FIELD HOUSE MANSARD ROOF SCREEN STRUCTURE

STADIUM - 34 - FIELD HOUSE TWO-PLY MODIFIED ROOFING TYPICAL DRAIN

PLEASANT HILLS MIDDLE SCHOOL

404 Old Clairton Road
Pleasant Hills, PA 15236-4398
Principal: Mr. Daniel Como
Enrollment +/- 664

Pleasant Hills Middle School Grades 6-8:

- **General Condition**
  - Pleasant Hills Middle School was erected in 1965; the most recent major additions and alterations were completed in 2003. These additions and alterations encompassed major building improvements, scheduled space upgrades, and major mechanical, electrical, and plumbing work.
  - Pleasant Hills Middle School is located on approximately 10.2 acres; which is predominately a sloped, partially wooded site, nestled into the side of a hill.

Site Summary:

- **Safety**
  - No safety hazards are identified at this time due to the recent construction project in 2003.
- **Site Grading and Drainage**
  - The site appears to be adequately graded relative to the impacted slopes surrounding half of the building and there are no indications of poor drainage.
  - There are signs of deterioration in the forward retaining wall due to spalling concrete from ground source water.

- **Pavement and Sidewalk Management**
  - Pavement in general shows no evidence of significant weathering damage or age and is in fair to good condition.
  - The one exception in pavement condition is at the front walks and guard rails above the retaining wall at the main entrance; which show substantial wear and spalling concrete. Pictures 9 and 10, Page 104.

- **Foundation and Geotechnical Issues**
  - No significant building foundation issues reported or noted to date with the following exceptions:
  - The previously mentioned front retaining wall at the main entrance is in poor condition due to concrete spalling from moisture infiltration.
  - The electrical room in the basement has water infiltration from through-wall conduits; the source of the water should be investigated and addressed.

Building Summary:

- Pleasant Hills Middle School is a three (3) story academic classroom "ring" with high-bay specialty spaces in the center (I.E. Gymnasium and Large Group Instruction). The Middle School received an addition in 2003 which increased the building classroom count and added an elevator. Pleasant Hills Middle School houses the typical compliments of middle school scheduled spaces which includes but are not limited to: General Classrooms, Special Education Classrooms, Library/ Media Center, Multi-Purpose Room, Art Classrooms, Science Classrooms, Music Classrooms, and Computer Labs.

- **Exterior Building Evaluation**
  - The original building consists of site-cast concrete frame and concrete masonry infill construction with a concrete and brick masonry veneer exterior.
  - The addition consists of steel frame and masonry bearing construction with a concrete and brick masonry veneer exterior.
  - The building envelope was renovated during the alterations of 2003 and appears to be in good condition.
  - The exterior doors and frames were installed during the last alterations and are in good condition.
  - The window systems were installed during the last alterations and are in good condition.
  - The roofing system(s) is a combination of roofing materials.
    - The entire sloped roofing system (brown "pizza hut") is a two-ply, modified bitumen roofing system. It was installed during the summer of 1997 with a 20 year warranty. In the summer of 2013 it was observed that there appears to be possible issues that need to be addressed within the next year. Specifically, it was observed that there are large blisters forming in the roofing membrane; presumably due to moisture infiltration of the roofing system; the blistering could potentially lead to roof failure and cause water infiltration of the building. Since the roofing system is still under warentee the roofing system manufacturer should be notified of the situation.
    - The upper roofing system is a two-ply modified bitumen system, and was installed during the 2003 additions and alterations with a 20 year warranty.
    - The nearly vertical metal panel roofing was apparently reconditioned/ repaired during the 2003 construction project.
    - In general, there appears to be adequate sloping to the drains, and as a result there are minimal signs of ponding water and/or leaking in the building.

    - Access to the upper roof is achieved by using an internal roof ladder and hatch. The ladder exceeds the allowable height limit requiring fall protection; however no cage enclosure or fall protection exists; which is a safety/ code violation.

- **Interior Building Evaluation**
  - The interiors of the building are in generally excellent condition and are only in need of continued maintenance with the following exceptions:
    - The terrazzo in the corridors is in good condition and should be maintained.
    - The Vinyl Composition Tile (VCT) and/or carpeting in all of the classrooms are in good condition and should be maintained.
    - The Acoustical Ceiling Tile System (ACT) in the corridors and classrooms are in good condition and should be maintained.
    - The lockers in the corridors are in good condition and should be maintained.
    - The interior doors, frames, and hardware in the corridors, and in all of the classrooms, are in good condition and should be maintained.
    - The kitchen is a full-service location; the District does not currently operate a central kitchen; all food products are delivered, stored, prepared, and served at each respective school.

- **Americans with Disabilities Act Accessibility Guidelines (ADAAG)**
  - In general the entrances to the building do comply with ADAAG.
  - The building is a three (3) story structure with scheduled spaces on all three floors. Access is gained by way of an elevator located in the 2003 addition..
  - All of the classroom spaces have the required door clearances and/or hardware.
  - The toilet rooms appear to comply with ADAAG.
  - The audible and visual components of the fire alarm system comply with ADAAG and National Fire Protection Association (NFPA) codes.

Mechanical Summary:

- **Heating, Ventilating, and Air Conditioning (HVAC) Systems**
  - The building was originally constructed in 1965, and received substantial alterations and an addition in 2003.
  - That alteration and addition project included upgrades to all mechanical system(s), and added air-conditioning to all interior spaces (rooms without exterior walls or windows.
  - Classroom unit ventilator fans are set to run all the time during occupied periods. However, sometimes teachers will shut them off due to noise. All the unit ventilators were part of the 2003 renovation.
  - The controls should be upgraded to a web based HVAC system so that maintenance staff at each school can access units schedule and set points via a laptop computer.

- **Central Heating Plant**
  - The gas-fired boilers were installed in 2003 and are in good condition.
  - There is a mechanical makeup air unit, which operates whenever the boilers are on. There were no observed problems.

- **Cafeteria and Kitchen**
  - The cafeteria and kitchen mechanical equipment have no reported problems with the following exceptions:
  - The kitchen freezer and cooler compressors are wall mounted in the loading dock area. However, with the loading dock door closed the space gets extremely hot. While no one is normally in the space, high temperatures will affect the efficiency and longevity of the freezer and cooler condensing unit system. Picture 64, Page 131.
  - The air handling unit located at the rear of the cafeteria has a water leak coming from the condensate drain pan. This causes a slippery floor condition and must be fixed. It could be due to a block condensate drain which would cause an overflow of the drain pan. There is also some rust on the coil connection. Picture 82, Page 140.

- **Exhaust Systems**
  - Exhaust fans appear to have been replaced in 2003. All fans are operational and working as intended.
  - ~~The Tech-Ed shop exhaust system was not replaced in 2003. The District is currently undertaking a project to install a new dust collection system.~~ [JC Pierce facilitated the installation of the Tech-Ed shop exhaust system the summer of 2012.]

Plumbing Summary:

- **Plumbing and Fire Protection Systems**
  - The building Plumbing System was fully renovated during the alterations and addition in 2003.
  - The building is fully sprinkled and there are no observed or reported problems with the fire protection or the plumbing system
  - There are two new domestic water heating boilers which were installed during the 2010-2011 school year. Picture 75, Page 137.

Electrical Summary:

- **Service Entrance**
  - The building electrical systems were updated in 2003 during a major remodel.
  - A new 120/208 volt distribution panel was added and the existing 1965 distribution panel was maintained. Page 139.
  - The building power distribution is primarily 2003 vintage.
  - The main electrical room does not appear to be vented properly.
  - There appears to be a water infiltration issue in the main electrical room. Picture 81, Page 140.
  - Power factor correction payback period should be calculated for the Middle School.

- **Power Distribution**
  - For the most part the power distribution, wiring, and outlets, etc. were replaced/ upgraded during the 2003 project. However, It is reported that following the 2003 project many wall receptacles are non-functioning.
  - Part of the original power distribution system which remained untouched during the 2003 project were the floor receptacles located in the building lab classrooms. These floor receptacles are in many cases non-functioning; the floor receptacles are not gasketed and/or sealed as required by code; which can allow liquid and or debris to fall into the power contacts creating a fire and/ or safety hazard. Pictures 29 and 30, Page 114.
  - It was observed that there were many abandoned disconnects on the roof which might still be energized; many of which have been left open to the elements since the 2003 project. Picture 17, Page 108.

- **Emergency Power**
  - A Cummins 150KW 208/120V, three phase natural gas generator serves life safety and emergency loads.
  - The generator was installed in 2003 in an outdoor style enclosure. Picture 78, Page 138.

- **Fire Alarm System**
  - The building is supplied with a Siemens MXL fire alarm system.
  - This system includes complete smoke detector coverage and newer style horns and strobes.

- **Lighting**
  - Lighting throughout the facility consists of a mixture of T8 and compact fluorescent fixtures throughout; with metal halide type fixtures in the high ceiling areas (such as the gymnasium and cafeteria).
  - The majority of the fixture types are lay in ceiling, acrylic diffuser, T8 fluorescent fixtures installed in 2003.

- **Telecommunication/ Technology**
  - Note: Telecommunication and Technology were evaluated as part of a District-Wide Technology Feasibility Study; The District completed the Technology Infrastructure Improvements Phase I, which upgraded the District Administration Office Building and Thomas Jefferson High School during the summer/fall of 2012. Technology Infrastructure Improvements Phase II which gives upgrades to PHMS and Jefferson ES was implemented the summer of 2013.

Issues of Immediate Concern at the Pleasant Hills Middle School:

- **High Priority**

Issue No.1: [This issue was resolved during the Summer of 2013.]

- ~~Flush floor receptacles in the lab classrooms allow water and/or debris inside of the receptacles when scrubbing. In one instance, a flame was observed "shooting" out of a receptacle during scrub water operations. This hazard should be addressed. Note: This water/ debris ingress is indicative of receptacles that do not meet present codes.~~

~~**Consequence:**~~

- ~~Water infiltration into the floor electrical boxes poses a direct hazard to the building and occupant safety.~~

~~**Recommended Next Step:**~~

- ~~Eliminate or replace the non-compliant floor boxes with sealed code complaint floor boxes.~~

Issue No.2:

- Telephone service entrance conduits introduce water into the electrical service room (4160 VAC present in the electrical service room).

Consequence:

- The introduction of water into the electrical room poses an electrocution and/or fire hazard to the building and/or occupants.

Recommended Next Step:

- Recommendation for source of the water infiltration to be rectified/ repaired.

Issue No.3:

- Roof service access ladder exceeds the allowable code limits for enclosure and fall protection.

Consequence:

- During roof and/or rooftop equipment maintenance, personnel can slip and fall causing injury and/or death.

Recommended Next Step:

- Replacement and/or retrofit of the existing roof access ladder to met current safety codes.

Issue No.4:

- The front concrete retaining wall is spalling and showing deterioration from what appears to be moisture infiltration.

Consequence:

- Deterioration of cracking and spalling concrete is a progressively worsening issue. Water infiltrates the concrete fissures/ cracks and expands during freezing temperatures; which leads to further cracking and spalling; which allows even more water to infiltrate; and the deterioration cycle continues to worsen.

Recommended Next Step:

- Eliminate the water infiltration; cutout and repair the concrete fissures; and possibly reface the wall for aesthetics and additional weather protection.

Issue No.5:

- The gas piping on the roof feeding the rooftop units are severely rusted.

Consequence:

- Rust can seriously affect the longevity of steel piping including failure of the connections or the pipe itself. While small gas leaks located outdoors are generally not dangerous they are metered and would increase the building's gas bills. Additionally, small leaks can become large leeks which can become a health and/or safety hazard.

Recommended Next Step:

- All gas piping on roof should be leak tested then scraped and painted, and/or replaced as required.

- **Medium Priority**

Issue No.1:

- The kitchen freezer and cooler compressors are wall mounted in the loading dock area. However, with the loading dock door closed the space gets extremely hot.

Consequence:

- High temperatures will affect the efficiency and longevity of the freezer and cooler condensing unit system.

Recommended Next Step:

- Relocation of the compressor units and/or ventilation of space are recommended.

Issue No.2:

- Automated lighting control was not present. An automated lighting control system should be integrated into future upgrades.

Consequence:

- Currently, without automated lighting controls the building operates inefficiently and does not meet the current energy code.

Recommended Next Step:

- Replacement/ upgrade of the entire building lighting control system(s).

Issue No.3:

- Repair of inoperative power receptacles.

Consequence:

- Outlets without power are useless.

Recommended Next Step:

- Inoperative power receptacles should be repaired.

Issue No.4:

- The fire alarm goes off every time the emergency generator is tested; the emergency generator appears to be scheduled for an automatic startup test more frequently than is required by code.

Consequence:

- False alarms are a hardship for the building occupants and emergency response authorities. Repeated false alarms can cause complacency of the building occupants and emergency response authorities; which can delay future response time of building occupants and emergency response in case of a true emergency. Repeated generator testing can cause undue wear on the emergency components and fuel consumption.

Recommended Next Step:

- Correction of false fire alarms when the generator is exercised; and rescheduling of the automatic startup test.

Issue No.5:

- Magnetic (fire alarm) hold-open door hardware is inoperative at Stair D3.

Consequence:

- When the magnetic hold-open devices are inoperative, building occupants might use other methods of holding the door open. Manual methods of holding a door open will not allow the door to close automatically during an emergency. Building occupants could be at a disadvantage during an emergency.

Recommended Next Step:

- Repair the magnetic hold-open devices for Stair D3.

Issue No.6:

- Egress lighting appears to be insufficient in the LGI room.

Consequence:

- LGI occupants could be at a disadvantage during an emergency.

Recommended Next Step:

- Increase the amount of egress lighting in the LGI room.

Issue No.7:

- Abandoned disconnect switches on roof have been left open and may be energized.

Consequence:

- Open disconnect switches can: allow water to infiltrate the building; serve as hornet/wasp hotel; or could contribute to fire and/or electrocution.

Recommended Next Step:

- All abandoned disconnect switches should be depowered, closed, and/or demolished.

- **Low Priority**
  - All remaining issues in this evaluation can be considered to be low priority.

MIDDLE SCHOOL - 1 - MAIN ENTRANCE

MIDDLE SCHOOL - 2 - ENTRANCE CANOPY/ BRIDGE

MIDDLE SCHOOL - 3 - TYPICAL EXTERIOR

MIDDLE SCHOOL – 4 - EXTERIOR EATING AREA

MIDDLE SCHOOL - 5 - TYPICAL EXTERIOR

MIDDLE SCHOOL - 6 - TYPICAL EXTERIOR

MIDDLE SCHOOL - 7 - TYPICAL ADDITION EXTERIOR

MIDDLE SCHOOL - 8 - TYPICAL ADDITION EXTERIOR

MIDDLE SCHOOL - 9 – SPALLING CONCRETE RETAINING WALL

MIDDLE SCHOOL - 10 - SPALLING CONCRETE RETAINING WALL

MIDDLE SCHOOL - 11 - TYPICAL TWO-PLY ROOFING SYSTEM AND EQUIPMENT

MIDDLE SCHOOL - 12 - TYPICAL TWO-PLY ROOFING SYSTEM AND EQUIPMENT

MIDDLE SCHOOL - 13 - TYPICAL TWO-PLY ROOFING SYSTEM AND EQUIPMENT

MIDDLE SCHOOL - 14 - TYPICAL TWO-PLY ROOFING SYSTEM DRAINS (notice the condenser fan blades in the background)

MIDDLE SCHOOL - 15 - TYPICAL MECHANICAL LOUVER SCREENS

MIDDLE SCHOOL - 16 - TYPICAL ROOF PENITRATION/ RUSTY GAS LINE

MIDDLE SCHOOL - 17 - OPENED ELECTRICAL DISCONNECTS ON THE UPPER ROOF

MIDDLE SCHOOL - 18 - ABANDONNED TRUSS ANTENNA ON THE UPPER ROOF

MIDDLE SCHOOL - 19 - MAIN LOBBY

MIDDLE SCHOOL - 20 - MAIN LOBBY

MIDDLE SCHOOL - 21 - MAIN OFFICE

MIDDLE SCHOOL - 22 - MAIN OFFICE

MIDDLE SCHOOL - 23 - TYPICAL CORRIDOR

MIDDLE SCHOOL - 24 - TYPICAL CORRIDOR

MIDDLE SCHOOL - 25 - TYPICAL CLASSROOM

MIDDLE SCHOOL - 26 - TYPICAL CLASSROOM

MIDDLE SCHOOL - 27 - COMPUTER LAB

MIDDLE SCHOOL - 28 - COMPUTER LAB

MIDDLE SCHOOL - 29 - SCIENCE LAB

MIDDLE SCHOOL - 30 - SCIENCE LAB

MIDDLE SCHOOL - 31 - MUSIC CLASSROOM

MIDDLE SCHOOL - 32 - BAND ROOM

MIDDLE SCHOOL - 33 - FAMILY CONSUMER SCIENCE LAB

MIDDLE SCHOOL - 34 - FAMILY CONSUMER SCIENCE LAB

MIDDLE SCHOOL - 35 - ART ROOM

MIDDLE SCHOOL - 36 - ART ROOM

MIDDLE SCHOOL - 37 - TECH-ED LAB

MIDDLE SCHOOL - 38 - TECH-ED LAB

MIDDLE SCHOOL - 39 - INDUSTRIAL ARTS LAB/ CLASSROOM

MIDDLE SCHOOL - 40 - INDUSTRIAL ARTS LAB

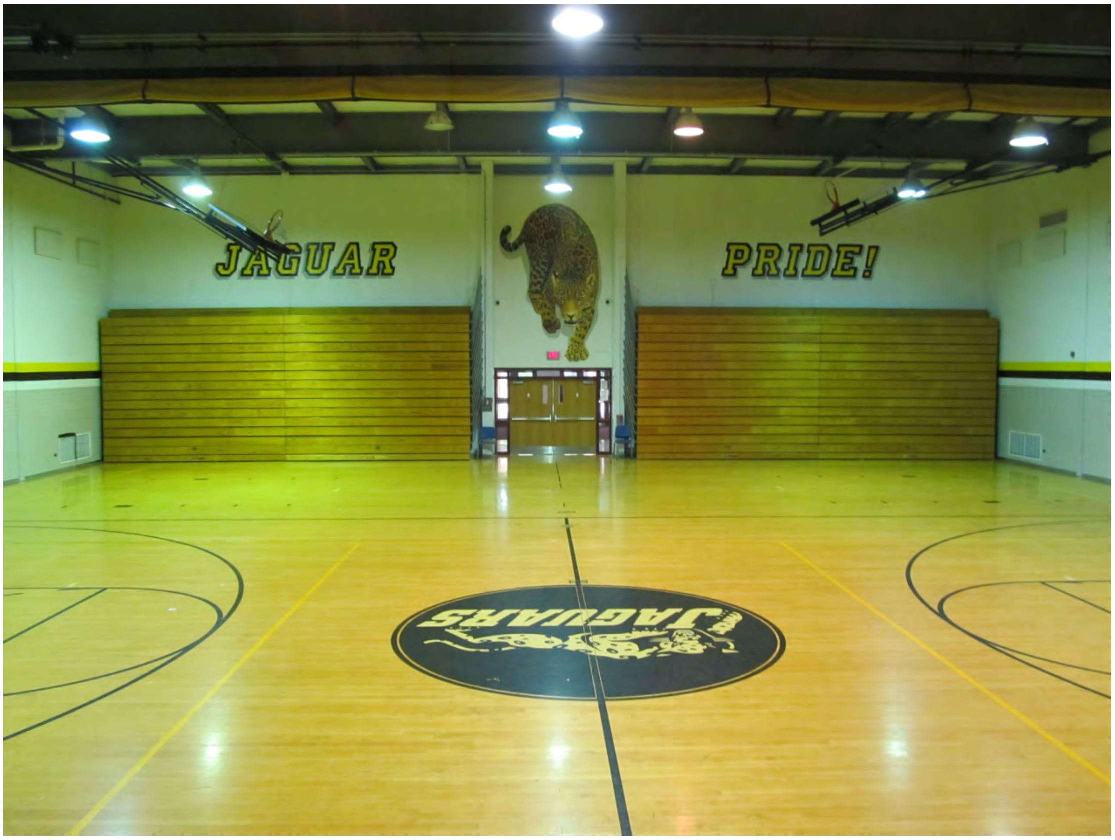
MIDDLE SCHOOL - 41 - LIBRARY/ MEDIA CENTER

MIDDLE SCHOOL - 42 - LIBRARY/ MEDIA CENTER

MIDDLE SCHOOL - 43 - LIBRARY/ MEDIA CENTER

MIDDLE SCHOOL - 44 - LIBRARY/ MEDIA CENTER

MIDDLE SCHOOL - 45 - GYMNASIUM/ MULTIPURPOSE ROOM



MIDDLE SCHOOL - 46 - GYMNASIUM/ MULTIPURPOSE ROOM

MIDDLE SCHOOL - 47 - GYMNASIUM/ MULTIPURPOSE ROOM

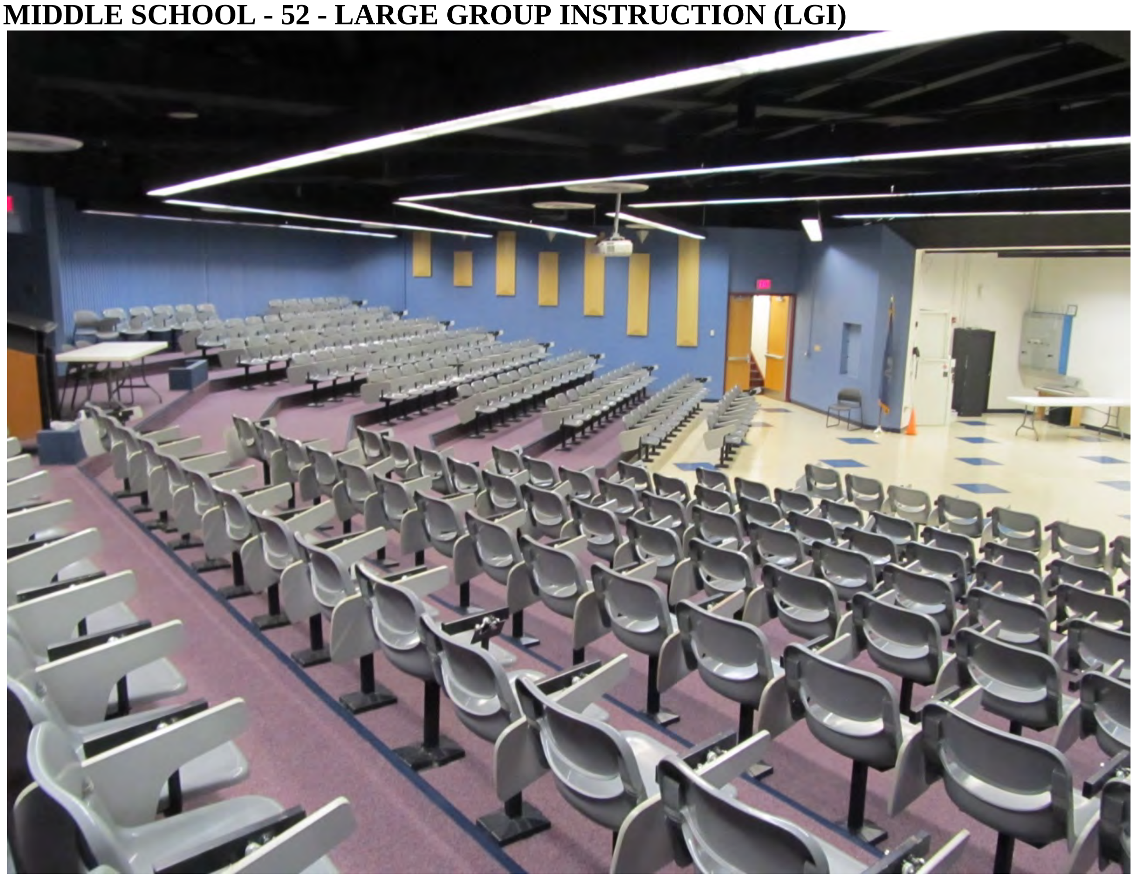
MIDDLE SCHOOL - 48 -GYMNASIUM/ MULTIPURPOSE ROOM

MIDDLE SCHOOL - 49 - GYMNASIUM/ MULTIPURPOSE ROOM STAGE CHAIRLIFT

MIDDLE SCHOOL - 50 - GYMNASIUM/ MULTIPURPOSE ROOM STAGE

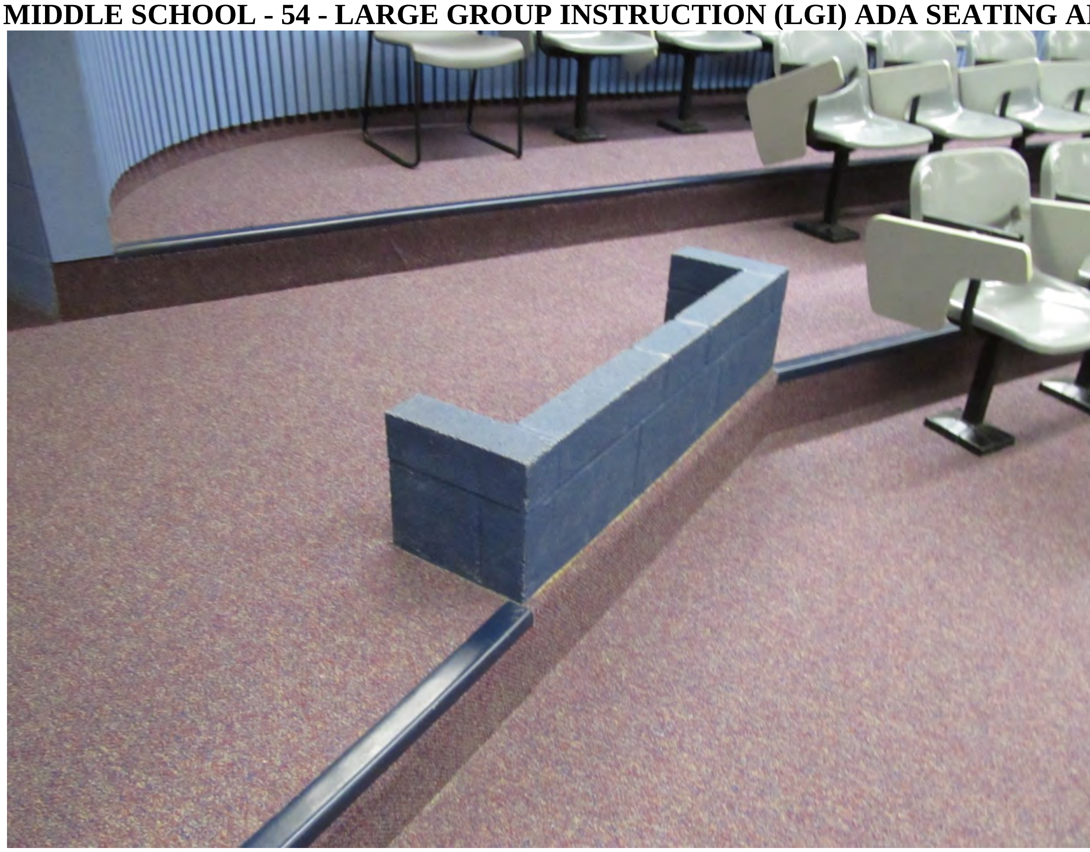
MIDDLE SCHOOL - 51 - LARGE GROUP INSTRUCTION (LGI)

MIDDLE SCHOOL - 52 - LARGE GROUP INSTRUCTION (LGI)



MIDDLE SCHOOL - 53 - LARGE GROUP INSTRUCTION (LGI) CHAIRLIFT

MIDDLE SCHOOL - 54 - LARGE GROUP INSTRUCTION (LGI) ADA SEATING AREA



MIDDLE SCHOOL - 55 - CAFETERIA

MIDDLE SCHOOL - 56 - CAFETERIA

MIDDLE SCHOOL - 57 - CAFETERIA

MIDDLE SCHOOL - 58 - CAFETERIA EXTERIOR EATING AREA

MIDDLE SCHOOL - 59 - KITCHEN SERVING LINE

MIDDLE SCHOOL - 60 - KITCHEN SERVING LINE

MIDDLE SCHOOL - 61 - KITCHEN

MIDDLE SCHOOL - 62 - KITCHEN

MIDDLE SCHOOL - 63 - DISHWASHING

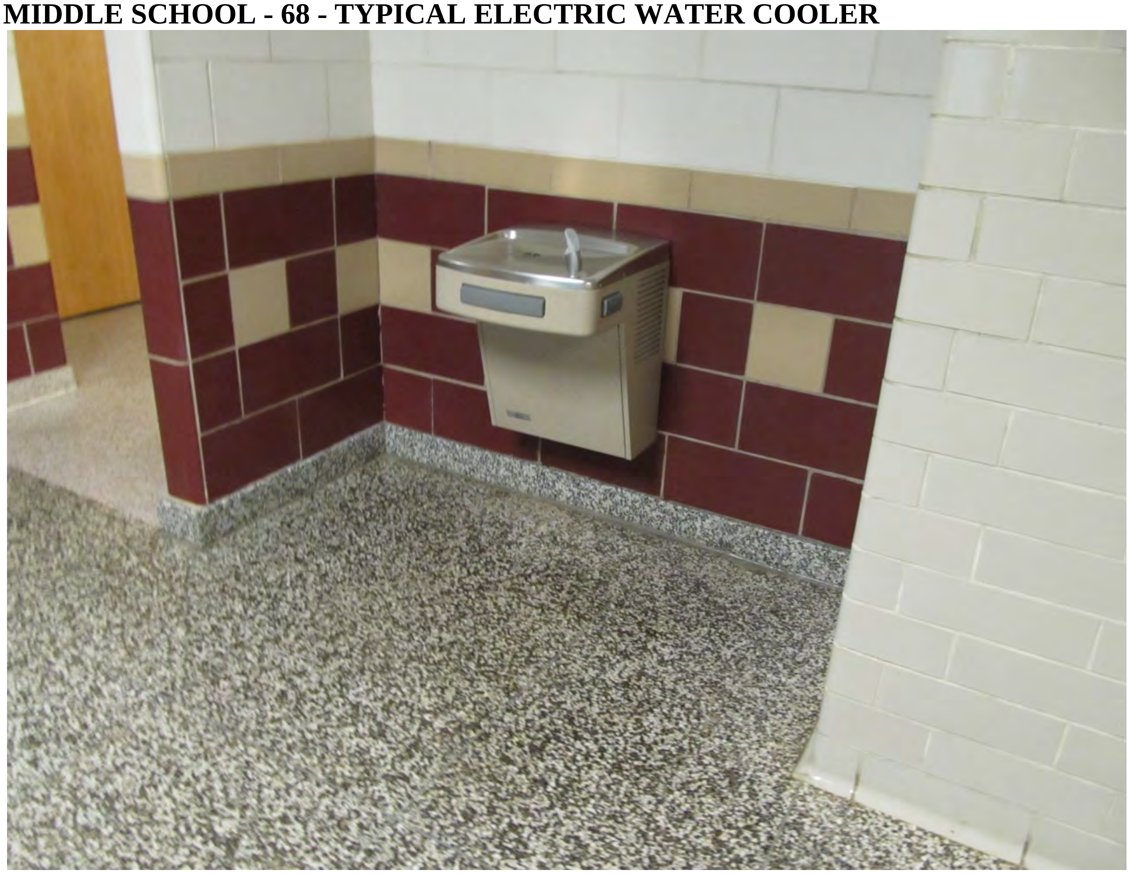
MIDDLE SCHOOL – 64 - REFRIDGERATOR/ FREEZER COMPRESSORS

MIDDLE SCHOOL - 65 - TYPICAL TOILET ROOM

MIDDLE SCHOOL - 66- TYPICAL TOILET ROOM

MIDDLE SCHOOL - 67 - TYPICAL TOILET ROOM

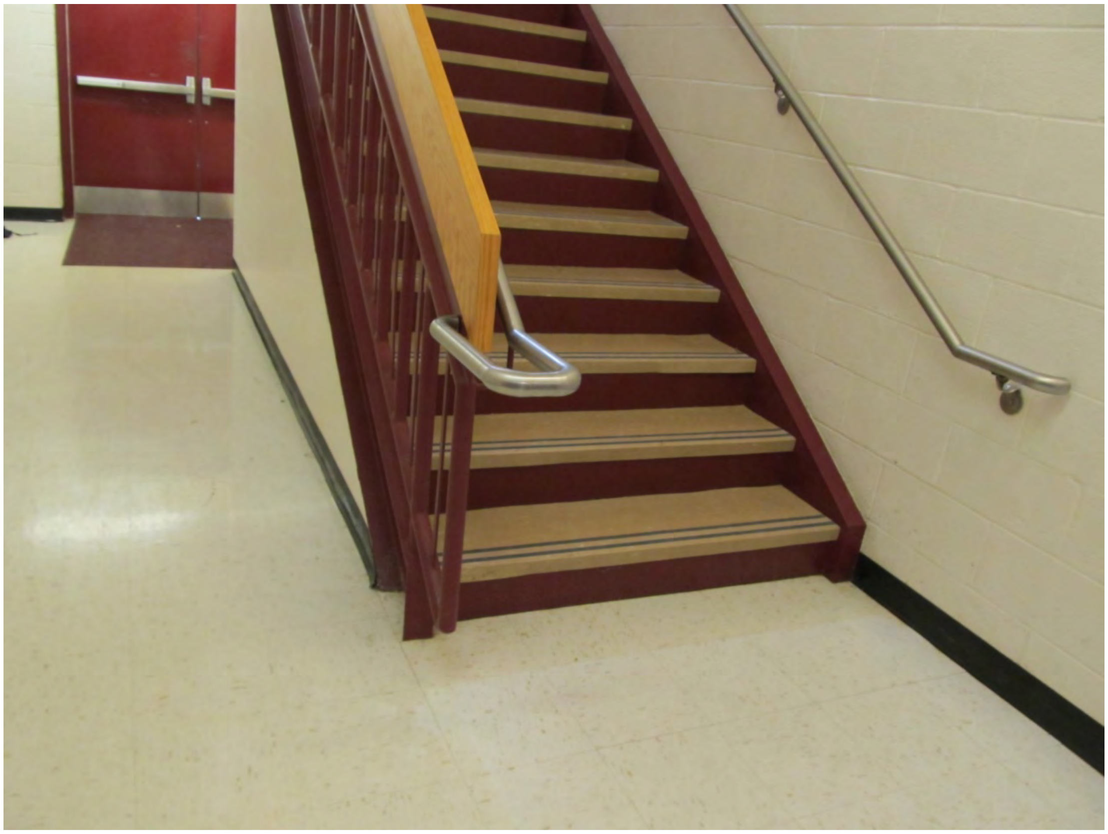
MIDDLE SCHOOL - 68 - TYPICAL ELECTRIC WATER COOLER



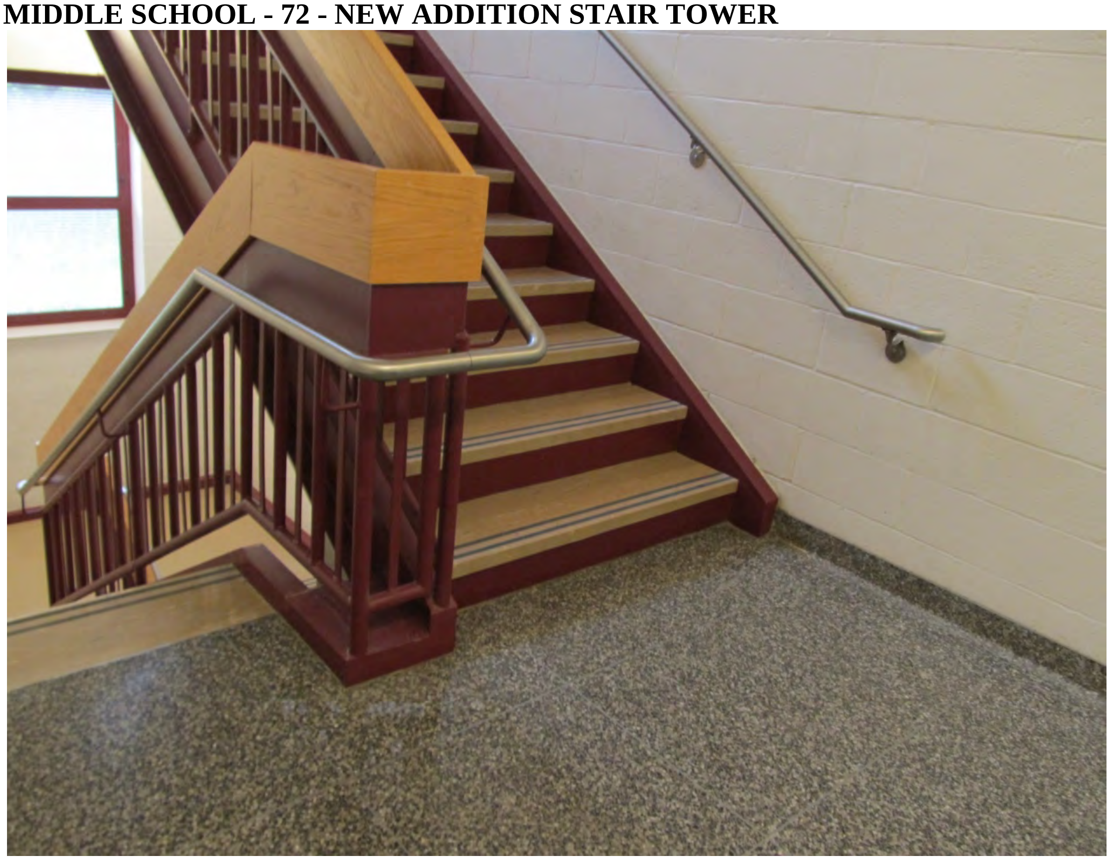
MIDDLE SCHOOL - 69 - TYPICAL ORIGINAL STAIR TOWER

MIDDLE SCHOOL - 70 - TYPICAL ORIGINAL STAIR TOWER

MIDDLE SCHOOL - 71 - NEW ADDITION STAIR TOWER



MIDDLE SCHOOL - 72 - NEW ADDITION STAIR TOWER



MIDDLE SCHOOL - 73 - BOILERS

MIDDLE SCHOOL - 74 - HEATING PUMPS

MIDDLE SCHOOL - 75 - DOMESTIC HOT WATER TANKS

MIDDLE SCHOOL - 76 - EXPANSION TANK

MIDDLE SCHOOL - 77 - CONTROL PANEL

MIDDLE SCHOOL - 78 - EMERGENCY GENERATOR

MIDDLE SCHOOL - 79 - ELECTRICAL SERVICE

MIDDLE SCHOOL - 80 - ELECTRICAL SWITCHGEAR

MIDDLE SCHOOL - 81 - LEAKING IN ELECTRICAL ROOM

MIDDLE SCHOOL - 82 - LEAKING CONDENSATION, AIR HANDLING UNIT AT THE CAFETERIA

GILL HALL ELEMENTARY SCHOOL

829 Gill Hall Road
Jefferson Hills, PA 15025
Principal: Tina Mayer
Enrollment: +/- 278

<u>Gill Hall Elementary School Grades K-5:</u>

- **General Condition**
  - Gill Hall Elementary School was erected in 1962 with additions and alterations in 2002. These additions and alterations encompassed some major building improvements, scheduled space upgrades, as well as some major mechanical electrical and plumbing work.
  - Gill Hall Elementary School is located on a moderately flat site created by cut and filling a new plateau. The school is on about 11.2 acres located in a rural residential area; and it is surrounded by woods.

Site Summary:

- **Safety**
  - Student drop-off and pick-up presents a safety concern due to the single circular access drive, with a common entrance and exit from Gill Hall Road. There is a cause for concern as a result of the cross-over traffic patterns between buses and cars during times of drop-off and pick-up of students.

- **Site Grading and Drainage**

    - The site appears to be adequately graded and there are no indications of poor drainage.
- **Pavement and Sidewalk Management**
    - Pavement in general shows no evidence of significant weathering damage or age and is in good condition.
- **Parking**
    - The current number of on-site parking spaces is insufficient for event parking.
- **Foundation and Geotechnical Issues**
    - No significant building foundation issues reported or noted to date.

Building Summary:

- Gill Hall Elementary is a one story academic classroom building which houses the typical compliment of Elementary school scheduled spaces which includes but is not limited to: General Classrooms, Special Education Classrooms, Library/ Media Center, Multi-Purpose Room, Gymnasium, Art Classrooms, Music Classrooms, and Computer Labs.

- **Exterior Building Evaluation**
    - The building consists of steel frame and masonry bearing construction with a brick masonry veneer exterior.
    - The building envelope was renovated during the alterations of 2002 and appears to be in good to fair condition.
    - The masonry chimney is showing signs of deterioration and spalling brick. The chimney will need to be re-pointed and/or repaired as part of future maintenance.
    - The exterior doors and frames were installed during the last alterations and are in good condition.
    - The window systems were installed during the last alterations and are in good condition.
    - ~~The roofing system on the original building is a mix of fully adhered and ballasted EPDM (Ethylene Propylene Diene Monomer) single-ply rubber membrane roofing system; the new addition roofing system is a two-ply modified membrane system.~~
        - ~~The EPDM roofing systems are well beyond their serviceable life and need to be replaced. There are signs of ponding water throughout the existing building which contributes to the leaking of the existing roof.~~ [Roof sections replaced the Summer of 2013].
        - The two-ply modified roofing system on the additions was installed during the 2002 construction project with a 20 year warranty, and is in fair condition; it would appear that there are warranty issues that need to be addressed within the next year. Specifically, it was observed that there are large blisters forming in the roofing membrane; presumably due to moisture infiltration of the roofing system. In addition, it would appear as though the parapet flashings of the gymnasium roof have delaminated from the walls; this can lead to accelerated degradation of the roofing system particularly at the parapets which will potentially lead to roof failure and cause water infiltration of the building.

- **Interior Building Evaluation**
    - The interiors of the building are in generally excellent condition and are only in need of continued maintenance with the following exceptions:
        - The terrazzo in the corridors is in good condition and should be maintained.

- The Vinyl Composition Tile (VCT) and/or carpeting in all of the classrooms are in good condition and should be maintained.
- The Acoustical Ceiling Tile System (ACT) in the corridors is in good condition and should be maintained, though some cupping has occurred due to humidity.
- The interior doors, frames, and hardware in the corridors and in all of the classrooms are in good condition and should be maintained.
- The kitchen is a full-service location; the District does not currently operate a central kitchen; all food products are delivered, stored, prepared, and served at each respective school.

- **Americans with Disabilities Act Accessibility Guidelines (ADAAG)**
  - In general the entrances to the building do comply with ADAAG.
  - The building is a one story structure which does not limit accessibility.
  - All of the classroom spaces appear to have the required door clearances and/or hardware.
  - The toilet rooms appear to comply with ADAAG.
  - The audible and visual components of the fire alarm system comply with ADAAG and National Fire Protection Association (NFPA) codes..

Mechanical Summary:

- **Heating, Ventilating, and Air Conditioning (HVAC) Systems**
  - The building Heating and Ventilation System received upgrades during the 2002 additions and alterations.
  - There are continuing problems with the two air handling units that serve the multipurpose room. Air handling Unit (AHU) 1 is out of service due to a circuit board being burned out. Air handling Unit (AHU) 2 just came back online. Maintenance staff reports that the units are frequently off-line.
  - Rooftop unit # 4 is also not working. This serves the corridor of the school. Picture 20, Page 143.
  - Only 4 of the 10 rooftop units have cooling. The areas that are cooled are the resource center, a computer room, the administration area, and the nurse's and health station.
  - The classroom unit ventilators may only operate when there is a need for heating. The individual teacher may choose to shut off the fan to reduce the ambient noise. This restricts ventilation, and is non-code compliant.
  - The gymnasium air units are of a similar design to the McClellan Elementary and also suffer from the same condition of insufficient relief air which over-pressurizes the space, and results in pressurized air blowing out of the doors.
  - The controls should be upgraded to a web based HVAC system so that maintenance staff at each school can access the units' schedule and set points via a computer.

- **Central Heating Plant**
  - There are no major concerns in the boiler room. There is no automatic switching between the primary and standby pump so they are manually switched to even out the operational hours on each pump.

- **Exhaust Systems**
  - Exhaust fans appear to have been replaced in 2002. All fans are operational and working as intended.

Plumbing Summary:

- **Plumbing and Fire Protection Systems**
  - The building Plumbing System received upgrades during the 2002 additions and alterations.
  - The domestic hot water boiler and tank were installed during the 2010-0211 school year; both are in good condition. Picture 57, Page 144
  - The building is partially sprinkled.
  - There are no major plumbing issues reported.
  - ~~The exterior gas piping shows trace amounts of exterior corrosion and should be wire brushed and painted.~~ [Completed summer/ fall 2013]

Electrical Summary:

- **Service Entrance**
  - The building electrical systems were updated in 2002 during a major remodel.
  - A new 1600 amp 120/208 volt GE Spectra Series distribution panel was added.
  - Most of the power distribution is new (2002). Some existing distribution panels were maintained.
  - Power factor correction payback period should be calculated for the School.

- **Emergency Power**
  - A Cummins 70KW 208/120V, three phase natural gas generator serves life safety and emergency loads.
  - The generator was installed in 2002 in an outdoor style enclosure.

- **Fire Alarm System**
  - The building is supplied with an Edwards/ GE fire alarm system.
  - This system includes (corridors and most rooms) smoke detector coverage and newer style horns and strobes.

- **Lighting**
  - Lighting throughout the facility is primarily fluorescent.
  - The majority of the fixture types are lay in ceiling, acrylic diffuser.
  - The lamp types are a mixture of T8 fluorescent fixtures and T12. T12 lamps and ballasts are rapidly being phased out of production.
  - WJHSD site personnel confirmed that the T12 lamps have been increasing in price and suppliers have indicated that the T12 may not be available at some point in time.
  - Based on the site observation of 5-12-12, the majority of lamps are T8.

- **Telecommunication/ Technology**
  - Note: Telecommunication and Technology were evaluated as part of a District-Wide Technology Feasibility Study (Appendix); [The District has implemented Phase I and II which has upgraded the District Administration Office Building and Thomas Jefferson High School (summer 2012) and Pleasant Hills Middle School and Jefferson Elementary (summer 2013).] Gill Hall and McClellan Technology is scheduled to be address in Phase III (summer 2014?).

Issues of Immediate Concern at the Gill Hall Elementary School:

- **High Priority**

  Issue No.1:

  - There are T12 fluorescent lighting fixtures and ballasts throughout the building.

  Consequence:

  - The T12 fluorescent lighting fixtures and ballasts will become cost prohibitive to maintain.

  Recommended Next Step:

  - Phasing out the T12 fluorescent lighting fixtures should be considered.

  ~~**Issue No.2:**~~

  - ~~The ballasted and fully adhered EPDM roofing system(s) are beyond their effective useful life and are actively failing/ leaking.~~

  ~~**Consequence:**~~

  - ~~Water infiltration into the buildings can cause superficial damage to interior finishes; prolonged leaking can cause damage to the building structure and create poor indoor air quality concerns.~~

  ~~**Recommended Next Step:**~~

  - ~~The roofing systems should be replaced.~~ [Roof Replacement Summer 2013]

- **Medium Priority**

  Issue No.1:

  - Automated lighting control was not present. An automated lighting control system should be integrated into future upgrades.

  Consequence:

  - Currently, without automated lighting controls the building operates inefficiently and does not meet the current energy code.

  Recommended Next Step:

  - Replacement/ upgrade of the entire building lighting control system(s).

  Issue No.2:

  - During the site observation of 5-12-12, a staff member reported that several circuit boards have been "burning out" due to unknown causes. This issue may be a power quality problem and this issue should be investigated.

  Consequence:

  - While the hazard level from this potential problem is presently unknown, school district costs to replace the referenced circuit boards are quantifiable.

  Recommended Next Step:

  - Investigate the cause of the burned out boards and rectify the problem.

Issue No.3:

- The gymnasium equipment control system for raising backboards and controlling other gym equipment features is inoperative. During the site observation of 5-12-12, a staff member reported "smelling burnt electrical" insulation shortly after the 2002 remodel. The subsystem in question is thought to be the gymnasium equipment controller and relay panel(s).

Consequence:

- The gymnasium equipment is not functioning as designed due to the failed system; District personnel have bypassed some of the equipment controller circuits in order to manually override the malfunctioning equipment controller.

Recommended Next Step:

- Investigate the cause of the malfunction and rectify the problem.

- **Low Priority**
  - All remaining issues in this evaluation can be considered to be low priority.

GILL HALL – 1 - MAIN ENTRANCE

GILL HALL – 2 - ENTRANCE CANOPY

GILL HALL – 3 - TYPICAL EXTERIOR

GILL HALL – 4 - TYPICAL EXTERIOR

GILL HALL – 5 - TYPICAL EXTERIOR

GILL HALL – 6 - TYPICAL EXTERIOR

GILL HALL – 7 - TYPICAL EXTERIOR

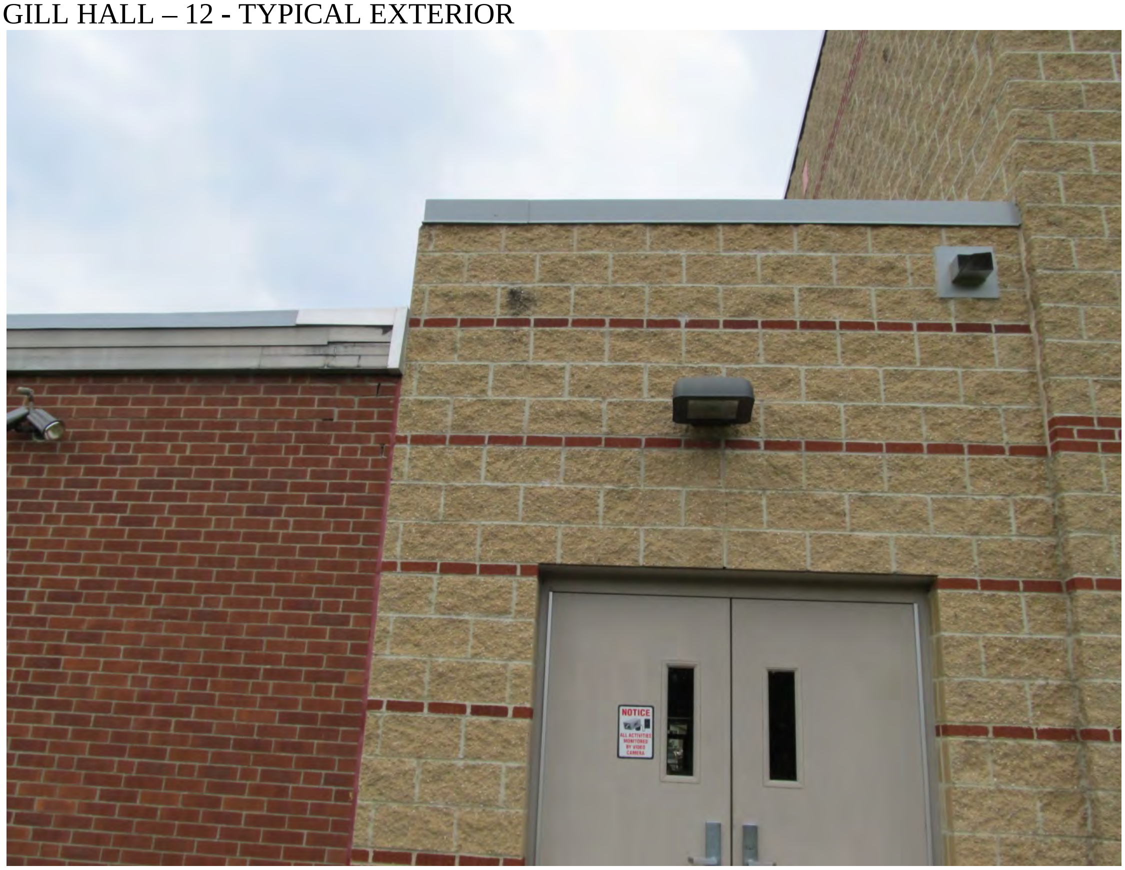
GILL HALL – 8 - TYPICAL EXTERIOR

GILL HALL – 9 - HORNETS NEST

GILL HALL –10 - TYPICAL EXTERIOR

GILL HALL – 11 - TYPICAL EXTERIOR

GILL HALL – 12 - TYPICAL EXTERIOR



GILL HALL – 13 - TYPICAL EXTERIOR

GILL HALL – 14 - TYPICAL EXTERIOR

GILL HALL – 15 - TYPICAL EXTERIOR

GILL HALL – 16 - TYPICAL EXTERIOR

GILL HALL – 17 - TYPICAL EXTERIOR: CONDENSATION TRAPPED IN POLYCARBONATE WINDOW SYSTEM [Replaced the Summer of 2013]

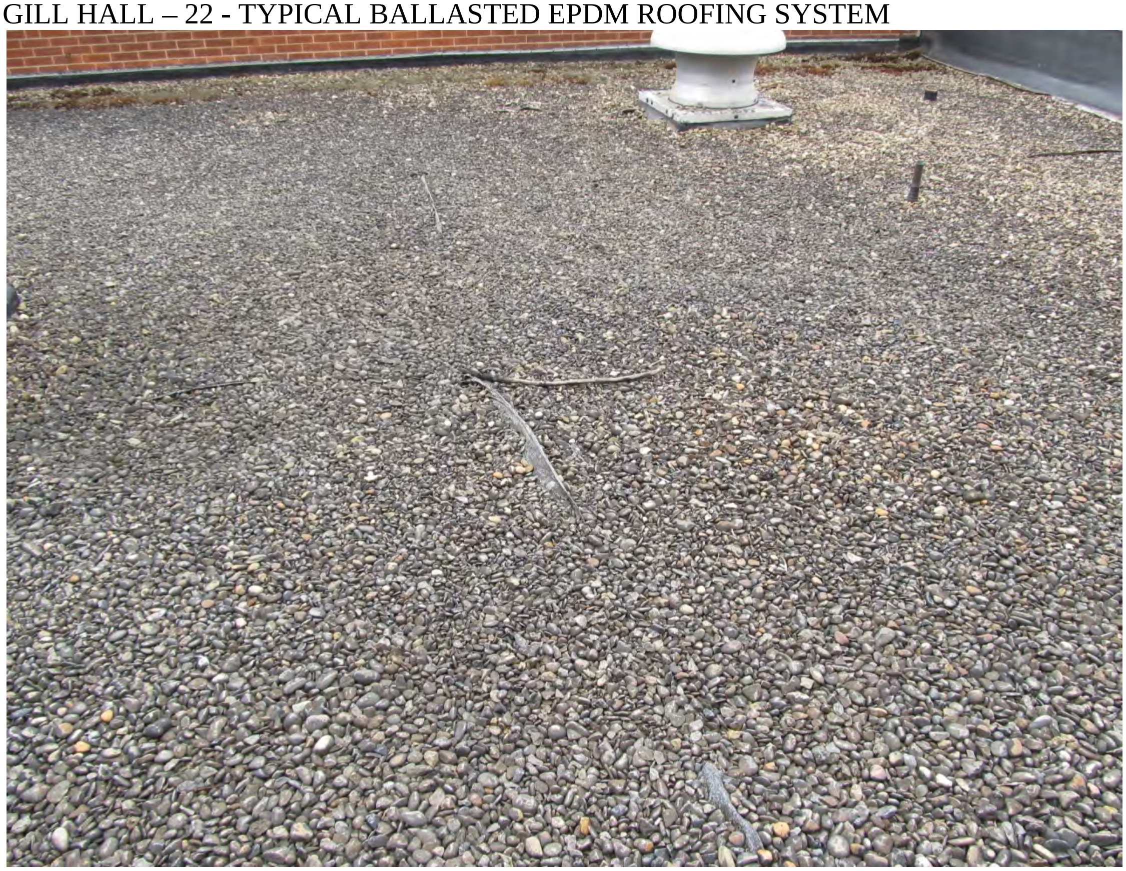
GILL HALL – 18 - TYPICAL EXTERIOR: STEEL LINTEL GAP

GILL HALL – 19 - TYPICAL TWO-PLY ROOFING SYSTEM AND EQUIPMENT

GILL HALL – 20 - TYPICAL TWO-PLY ROOFING SYSTEM AND EQUIPMENT

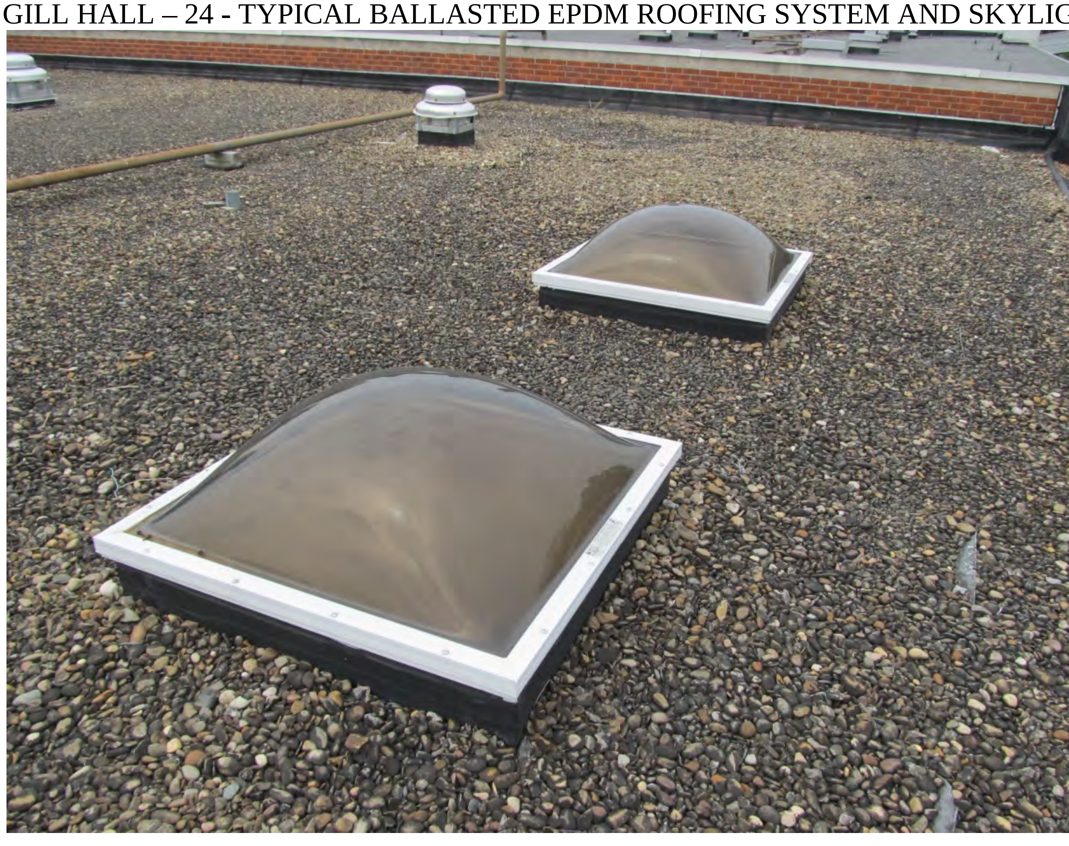
GILL HALL – 21 - TYPICAL BALLASTED EPDM ROOFING SYSTEM AND EQUIPMENT

GILL HALL – 22 - TYPICAL BALLASTED EPDM ROOFING SYSTEM



GILL HALL – 23 - TYPICAL BALLASTED EPDM ROOFING SYSTEM

GILL HALL – 24 - TYPICAL BALLASTED EPDM ROOFING SYSTEM AND SKYLIGHTS



GILL HALL – 25 - STANDING SEAM METAL ROOF AT THE MULTIPURPOSE ROOM

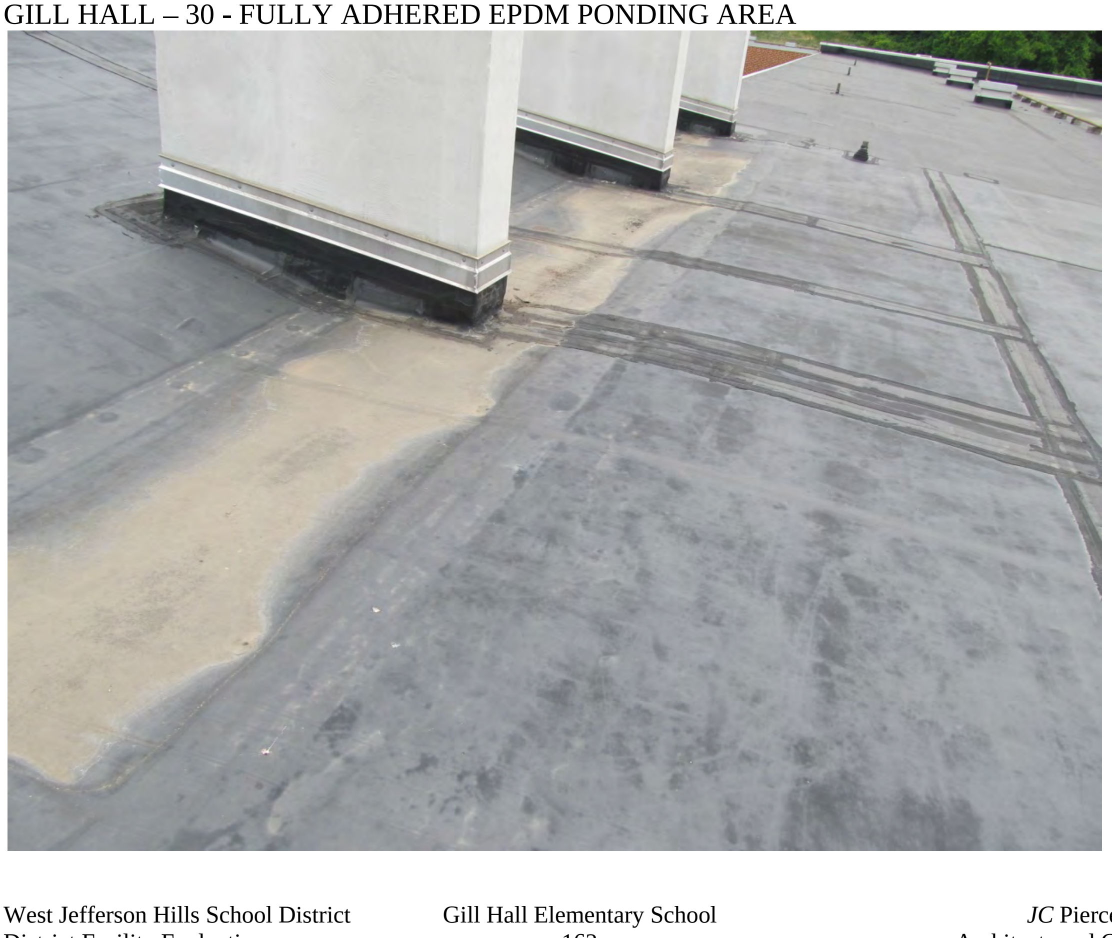
GILL HALL – 26 - TYPICAL FULLY ADHERED EPDM AND EQUIPMENT/ VENTS

GILL HALL – 27 - TYPICAL FULLY ADHERED EPDM AND EQUIPMENT/ VENTS

GILL HALL – 28 - FAILING EPDM PATCH

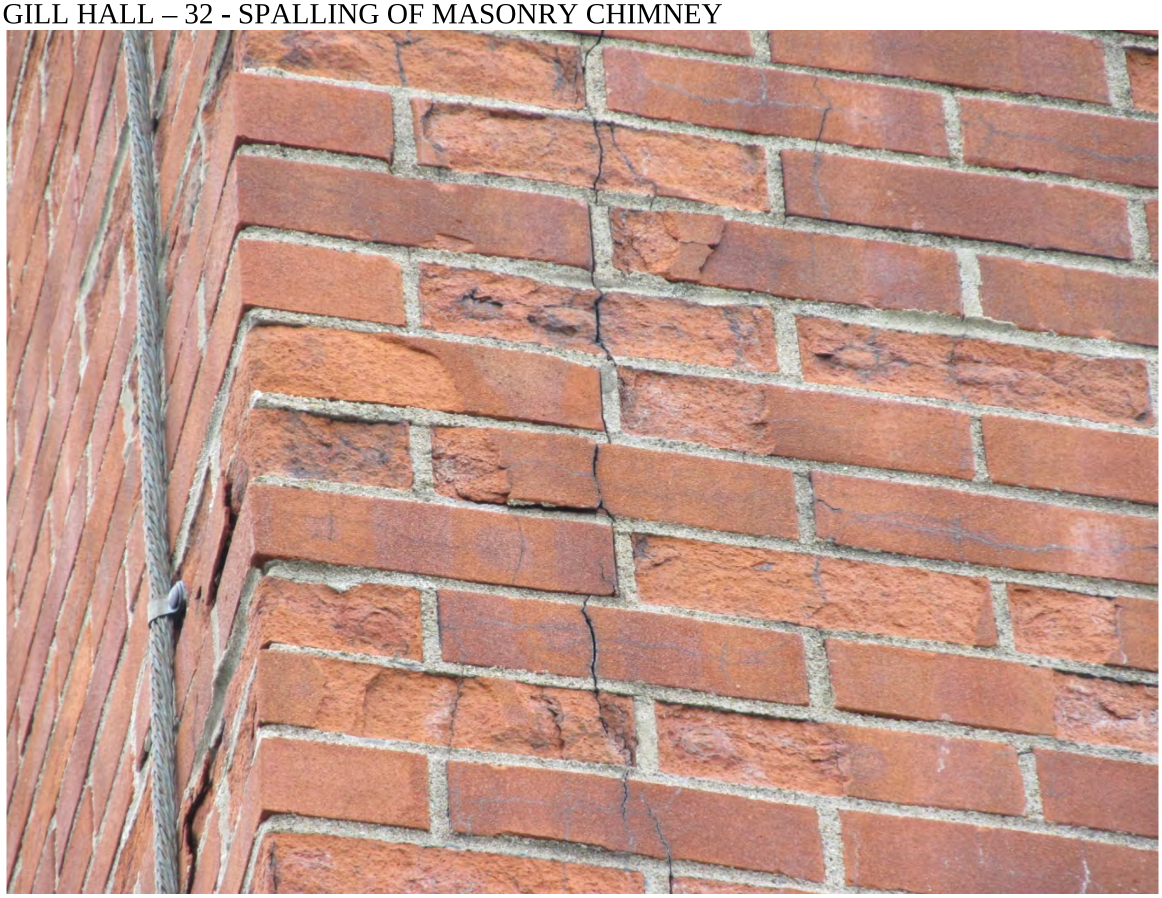
GILL HALL – 29 - FAILING EPDM PARAPET FLASHING

GILL HALL – 30 - FULLY ADHERED EPDM PONDING AREA



GILL HALL – 31 - SPALLING OF MASONRY CHIMNEY

GILL HALL – 32 - SPALLING OF MASONRY CHIMNEY



GILL HALL – 33 - MAIN OFFICE

GILL HALL – 34 - MAIN OFFICE

GILL HALL – 35 - TYPICAL CORRIDOR

GILL HALL – 36 - TYPICAL CORRIDOR

GILL HALL – 37 - TYPICAL CLASSROOM

GILL HALL – 38 - TYPICAL CLASSROOM

GILL HALL – 39 - ART ROOM

GILL HALL – 40 - ART ROOM

GILL HALL – 41 - COMPUTER LAB

GILL HALL – 42 - COMPUTER LAB

GILL HALL – 43 - MUSIC ROOM

GILL HALL – 44 - NURSE SUITE

GILL HALL - 45 - LIBRARY

GILL HALL - 46 - LIBRARY

GILL HALL – 47 - MULTIPURPOSE ROOM

GILL HALL – 48 - MULTIPURPOSE ROOM

GILL HALL – 49 - EXTERIOR SEATING AREA

GILL HALL – 50 - SERVING LINE/ KITCHEN

GILL HALL – 51 - SERVING LINE/ KITCHEN

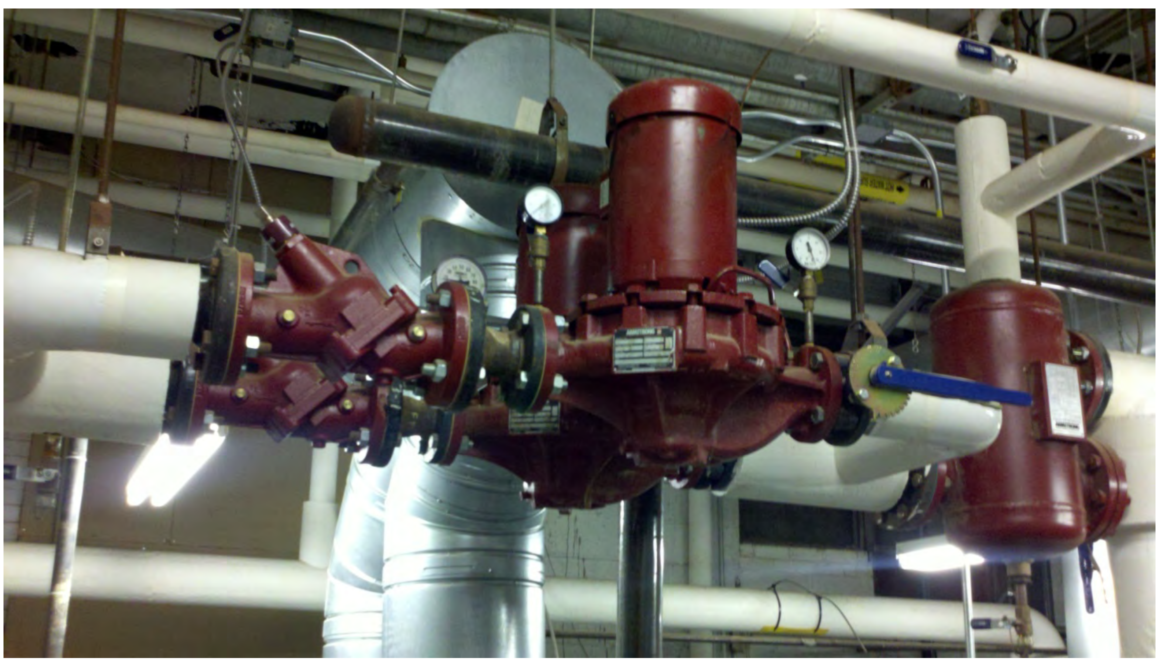
GILL HALL - 52 - KITCHEN

GILL HALL – 53 - TYPICAL TOILET ROOM

GILL HALL – 54 - TYPICAL TOILET ROOM

GILL HALL – 55 - BOILERS

GILL HALL – 56 - HEATING CIRCULATION PUMPS



GILL HALL – 57 - DOMESTIC HOTWATER BOILER/ TANK

GILL HALL – 58 - ELECTRIC SWITCHGEAR

GILL HALL – 59 - CONTROLERS

GILL HALL – 60 - EMERGENCY GENERATOR

McCLELLAN ELEMENTARY SCHOOL

360 School Lane
Pleasant Hills, PA 15236-4193
Principal: Mr. Justin Libertore
Enrollment: +/- 388

McClellan Elementary School – Grades K-5:

- **General Condition**
  - McClellan Elementary School was erected in the 1957. There was an addition completed in the 1960's, and the latest additions and alterations were completed in 2002. These additions and alterations encompassed some major building improvements, scheduled space upgrades, as well as some major mechanical electrical and plumbing work.
  - McClellan Elementary School is located on 8.03 acres on a moderately sloped, residential site; the building is one story in the front and two stories in the back.

Site Summary

- **Safety**
  - No safety hazards are identified at this time due to the recent construction project.
- **Site Grading and Drainage**
  - The site appears to be adequately graded and there are no indications of poor drainage.
- **Pavement and Sidewalk Management**
  - Pavement in general shows no evidence of significant weathering damage or age and is in good condition.

- **Parking**
  - The available number of on-site parking spaces has been maximized and there remains insufficient parking for events; there is no room to expand on-site parking.
- **Foundation and Geotechnical Issues**
  - Currently there appears to be structural settlement cracks that have begun to manifest on the new gymnasium addition; both in the interior and in the exterior veneer. The current cracks have been located and measured; crack monitors have been applied to each respective location to determine if the condition is static or worsening. Picture 19, Page 191; Pictures 41 and 42, Page 202.

Building Summary:

- McClellan Elementary is a two story (split level front to back) academic classroom building which houses the typical compliment of Elementary school scheduled spaces which includes but is not limited to: General Classrooms, Special Education Classrooms, Library/ Media Center, Multi-Purpose Room, Gymnasium, Art Classrooms, Music Classrooms, and Computer Labs.

- **Exterior Building Evaluation**
  - The building consists of steel frame and masonry bearing construction with a concrete and brick masonry veneer exterior.
  - The building envelope was renovated during the alterations of 2002 and appears to be in good condition.
  - The exterior doors and frames were installed during the last alterations and are in good condition.
  - The window systems were installed during the last alterations and are in good condition.
  - The roofing system is a two-ply, modified roofing system for the flat roofing areas; and asphalt shingles for the pitched roof areas. The shingled areas of the roof that were not replaced as part of the 2002 alterations were replaced in 2009.
  - There is no easy access to the roof (I.E. roof hatch and ladder) for roofing maintenance and/or equipment maintenance.

- **Interior Building Evaluation**
  - The interiors of the building are in generally excellent condition and are only in need of continued maintenance with the following exceptions:
  - The terrazzo in the corridors is in fair to good condition and should be maintained.
  - The Vinyl Composition Tile (VCT) and/or carpeting in all of the classrooms are in good condition and should be maintained.
  - The Acoustical Ceiling Tile System (ACT) in the corridors is in good condition and should be maintained.
  - The interior doors, frames, and hardware in the corridors and in all of the classrooms are in good condition and should be maintained.
  - The kitchen is a full-service location; the District does not currently operate a central kitchen; all food products are delivered, stored, prepared, and served at each respective school.

- **Americans with Disabilities Act Accessibility Guidelines (ADAAG)**
  - In general the entrances to the building do comply with ADAAG.
  - The building is a two story structure with scheduled spaces on both floors. Access is gained to the lower level by way of newly installed elevator.

- All of the classroom spaces have the required door clearances and/or hardware.
- The toilet rooms appear to comply with ADAAG.
- The audible and visual components of the fire alarm system comply with ADAAG and National Fire Protection Association (NFPA) codes..
- The railing extensions in the stair towers are no longer required; and currently pose a safety hazard. Picture 58, Page 210.

Mechanical Summary:

- **Heating, Ventilating, and Air Conditioning (HVAC) Systems**
  - The original building was constructed in 1957. The gymnasium was added in 2002 and mechanical equipment was replaced at this time.
  - The art room, principal's office and adjoining areas, the health center, and the computer lab are the only air-conditioned spaces.
  - Boilers and, pumps were replaced in 2002 and are in good shape. Pictures 59 and 60, Page 211.
  - This building is on the TRANE Tracer control system. Picture 62, Page 212.
  - For maintenance to operate or stop a unit, they have to call the main Trane computer control system for HVAC, located in the Administration Building.
  - Gymnasium air units have insufficient relief vents so air blows out the doors.
  - Several air units are located in an attic space. There is no floor on the attic joists and therefore is difficult or impossible to gain unit access. Even during our inspection, we had to be careful to stand on a small piece of plywood. In one area we inspected, a thin piece of plywood spans the joist. This is dangerous because it looks OK but would break with any substantial weight.
  - The controls should be upgraded to a web based HVAC system so that maintenance staff at each school can access units schedule and set points via a laptop computer.

- **Exhaust Systems**
  - Exhaust fans appear to have been replaced in 2002. All fans are operational and working as intended.

Plumbing Summary:

- **Plumbing and Fire Protection Systems**
  - The building Plumbing System received upgrades during the 2002 additions and alterations.
  - Domestic water heaters were replaced in 2002 and are in good shape. Picture 61, Page 212.
  - The building is partially sprinkled.
  - There are no major plumbing issues

Electrical Summary:

- **Service Entrance**
  - The building electrical systems were updated in 2002 during a major remodel.
  - A new 1600 amp 120/208 volt GE Spectra Series distribution panel was added.
  - Most of the power distribution is new (2002). Some existing distribution panels were maintained. Picture 63, Page 213.
  - Power factor correction payback period should be calculated for the School.

- **Emergency Power**
  - A Cummins 70KW 208/120V, three phase natural gas generator serves life safety and emergency loads.
  - The generator was installed in 2002 in an outdoor style enclosure.
  - A clearance issue at the emergency generator was observed. The access doors on the building side do not allow a full 90 degree opening. Picture 64, Page 213.

- **Fire Alarm System**
  - The building is supplied with an Edwards EST fire alarm system.
  - This system includes corridor smoke detector coverage and newer style horns and strobes.

- **Lighting**
  - Lighting throughout the facility consists of a mixture of fluorescent and metal halide in high ceiling areas (such as the gymnasium).
  - The majority of the fixture types are lay in ceiling, acrylic diffuser.
  - The lamp types are a mixture of T8 fluorescent fixtures and T12.
  - Based on the site observation of 5-12-12, the majority of lamps are T12. T12 lamps and ballasts are rapidly being phased out of production.
  - WJHSD site personnel confirmed that the T12 lamps have been increasing in price and suppliers have indicated that the T12 may not be available at some point in time.

- **Telecommunication/ Technology**
  - Note: Telecommunication and Technology were evaluated as part of a District-Wide Technology Feasibility Study (Appendix); [The District has implemented Phase I and II which has upgraded the District Administration Office Building and Thomas Jefferson High School (summer 2012) and Pleasant Hills Middle School and Jefferson Elementary (summer 2013).] Gill Hall and McClellan Technology is scheduled to be address in Phase III (summer 2014?).

Issues of Immediate Concern at the McClellan Elementary School:

- **High Priority**

Issue No.1:

- The mechanical units located in the attic spaces have limited access and inadequate clearances and/or work platforms.

Consequence:

- Working on or doing maintenance on mechanical units without proper clearances or work platform areas pose a life safety hazard.

Recommended Next Step:

- Install better access and work platforms for all of the mechanical units in the attic spaces.

Issue No.2:

- There is no access to the roof without the use of ground ladders.

Consequence:

- The lack of roof access complicates any roof and/or roof equipment maintenance.

Recommended Next Step:

- Install code compliant access to the roof.

Issue No.3:

- There are T12 fluorescent lighting fixtures and ballasts are throughout the building.

Consequence:

- The T12 fluorescent lighting fixtures and ballasts will become cost prohibitive to maintain.

Recommended Next Step:

- Phasing out the T12 fluorescent lighting fixtures should be considered.

Issue No.4:

- Structural settlement cracks have manifested on the gymnasium addition.

Consequence:

- Continued settlement can jeopardize the building structure and/or compromise the building exterior envelope.

Recommended Next Step:

- Recommendation for the continued monitoring of the cracks; culminating in remediation of the issue

Medium Priority

Issue No.1:

- Automated lighting control was not present. An automated lighting control system should be integrated into future upgrades.

Consequence:

- Currently, without automated lighting controls the building operates inefficiently and does not meet the current energy code.

Recommended Next Step:

- Replacement/ upgrade of the entire building lighting control system(s).
-

Issue No.2:

- A clearance issue at the emergency generator was observed. The access doors on the building side do not allow a full 90 degree opening.

Consequence:

- Lack of the required clearance could create a hazard for future maintenance.

Recommended Next Step:

- Move the generator and enclosure to allow for the proper clearances.

- **Low Priority**
  - All remaining issues in this evaluation can be considered to be low priority.

McCLELLAN - 1 - MAIN ENTRANCE

McCLELLAN – 2 - MAIN ENTRANCE CANOPY

McCLELLAN – 3 - TYPICAL EXTERIOR

McCLELLAN – 4 - TYPICAL EXTERIOR

McCLELLAN – 5 - GYMNASIUM ENTRANCE CANOPY

McCLELLAN – 6 - TYPICAL EXTERIOR

McCLELLAN – 7 - TYPICAL EXTERIOR

McCLELLAN – 8 - TYPICAL EXTERIOR

McCLELLAN – 9 - TYPICAL EXTERIOR

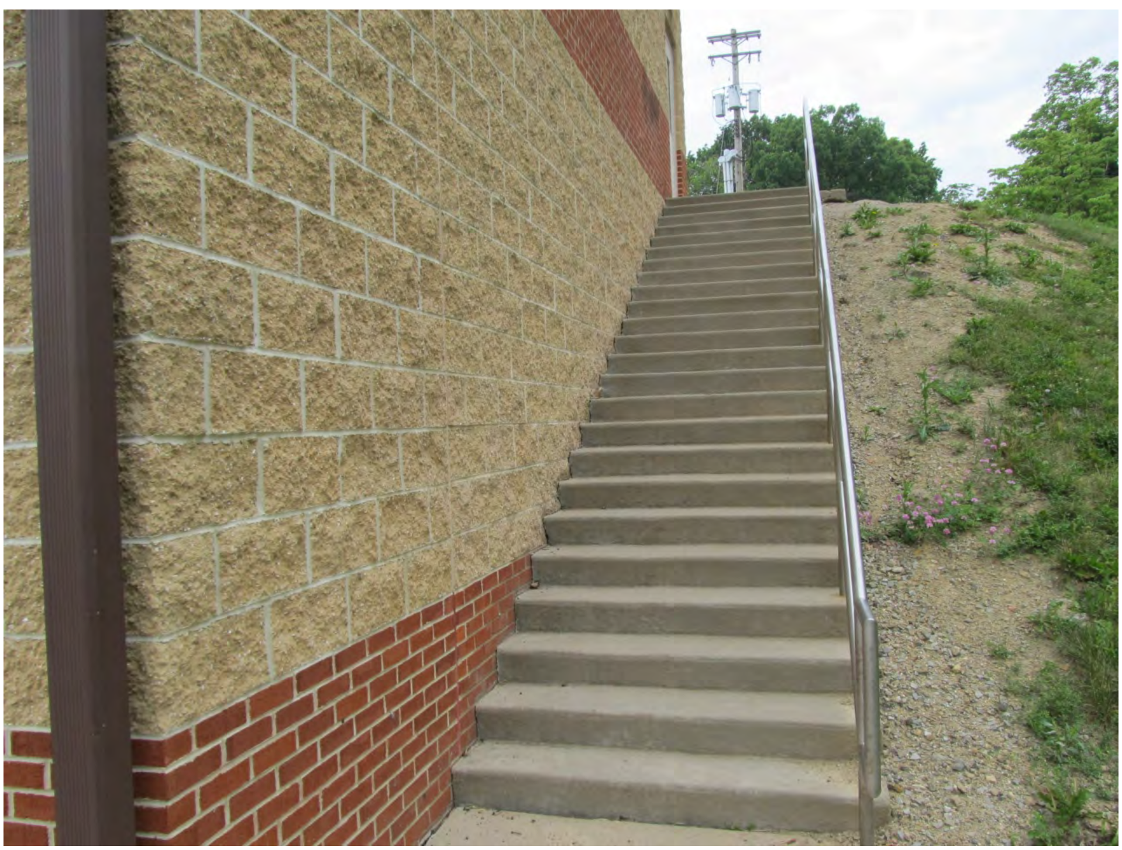
McCLELLAN – 10 - TYPICAL EXTERIOR

McCLELLAN – 11 - TYPICAL EXTERIOR

McCLELLAN – 12 - TYPICAL EXTERIOR

McCLELLAN – 13 - TYPICAL EXTERIOR

McCLELLAN – 14 - EXTERIOR STAIRS



McCLELLAN – 15 - TYPICAL EXTERIOR

McCLELLAN – 16 - TYPICAL EXTERIOR

McCLELLAN – 17 - TYPICAL EXTERIOR

McCLELLAN – 18 - SPALLING BRICK

McCLELLAN – 19 - TYPICAL EXTERIOR CRACK MONITOR

McCLELLAN – 20 - ENTRY GARDEN

McCLELLAN – 21 - ASPHALT SHINGLE ROOFING

McCLELLAN – 22 - ASPHALT SHINGLE ROOFING

McCLELLAN – 23 - MAIN ENTRANCE LOBBY/ MAIN OFFICE

McCLELLAN – 24 - MAIN OFFICE

McCLELLAN – 25 - TYPICAL CORRIDOR

McCLELLAN – 26 - TYPICAL CORRIDOR

McCLELLAN – 27 - TYPICAL CORRIDOR

McCLELLAN – 28 - TYPICAL CLASSROOM

McCLELLAN – 29 - COMPUTER LAB

McCLELLAN – 30 - COMPUTER LAB

McCLELLAN – 31 - MUSIC ROOM

McCLELLAN – 32 - MUSIC ROOM

McCLELLAN – 33 - ART ROOM

McCLELLAN – 34 - ART ROOM

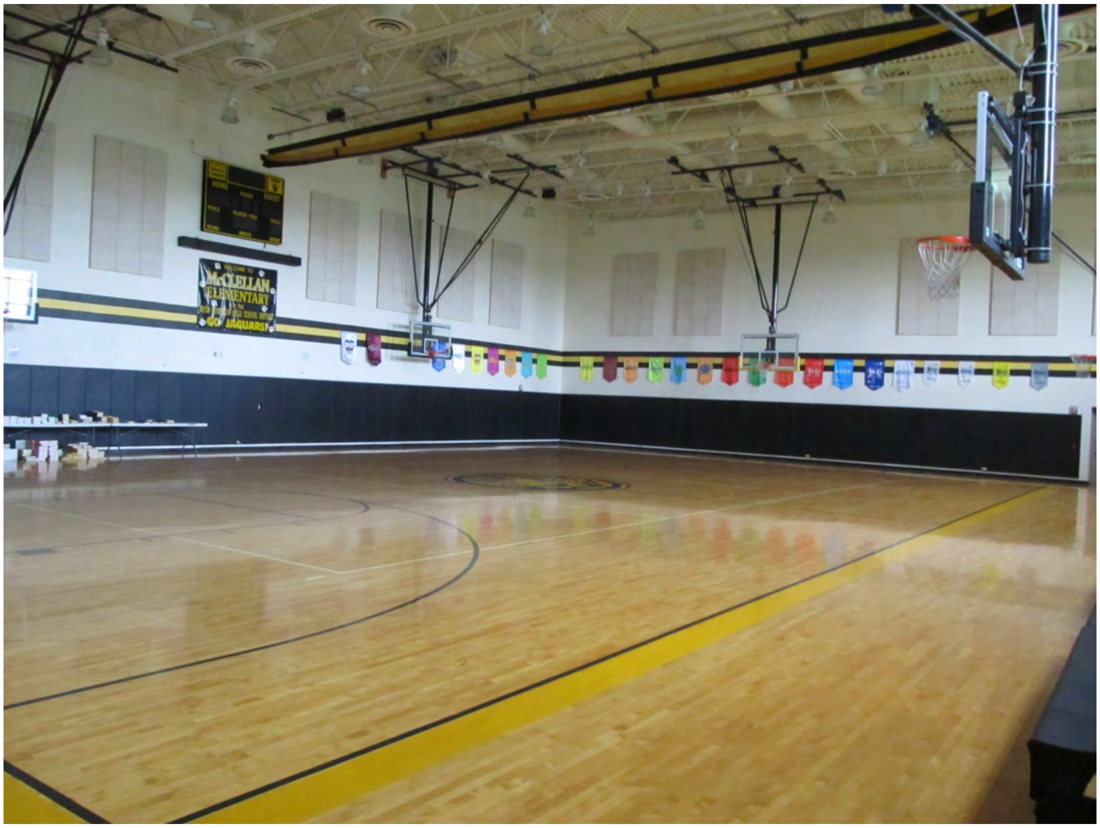
McCLELLAN – 35 - ART ROOM STAIRS

McCLELLAN – 36 - ART ROOM CHAIRLIFT

McCLELLAN – 37 - LIBRARY/ MEDIA CENTER

McCLELLAN – 38 - LIBRARY/ MEDIA CENTER

McCLELLAN – 39 - GYMNASIUM



McCLELLAN – 40 - GYMNASIUM

McCLELLAN – 41 - INTERIOR CRACKS IN GYMNASIUM

McCLELLAN – 42 - INTERIOR CRACKS IN GYMNASIUM

McCLELLAN – 43 - CAFETERIA ENTRANCE

McCLELLAN – 44 - CAFETERIA

McCLELLAN – 45 - CAFETERIA

McCLELLAN – 46 - CAFETERIA

McCLELLAN – 47 - SERVING LINE

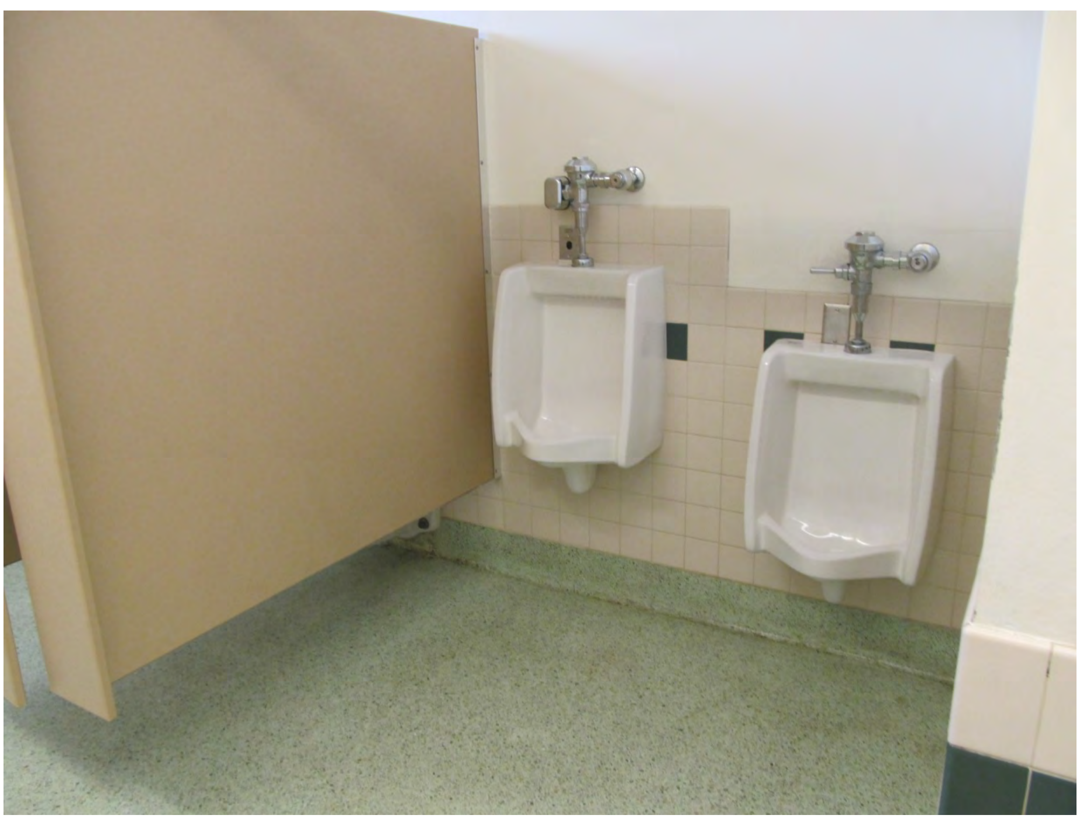
McCLELLAN – 48 - KITCHEN

McCLELLAN – 49 - KITCHEN

McCLELLAN – 50 - KITCHEN

McCLELLAN – 51 - TYPICAL TOILET ROOM

McCLELLAN – 52 - TYPICAL TOILET ROOM

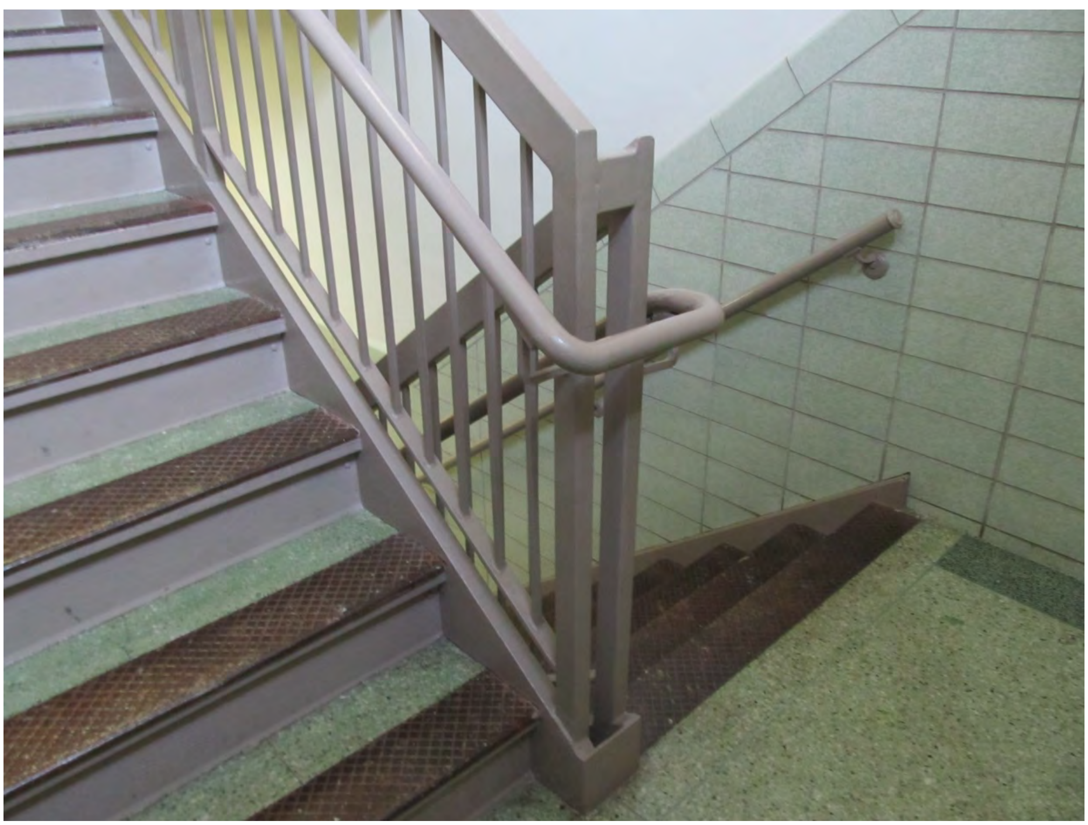


McCLELLAN – 53 - TYPICAL TOILET ROOM

McCLELLAN – 54 - TYPICAL ELECTRIC WATER COOLERS

McCLELLAN – 55 - TYPICAL STAIR/ HANDRAIL

McCLELLAN – 56 - TYPICAL STAIR/ HANDRAIL



McCLELLAN – 57 - TYPICAL STAIR HANDRAIL

McCLELLAN – 58 - HANDRAIL EXTENSION HAZARD

McCLELLAN – 59 - BOILERS

McCLELLAN – 60 - HEATING PUMPS

McCLELLAN – 61 - DOMESTIC HOT WATER

McCLELLAN – 62 – HVAC CONTROL PANELS

McCLELLAN – 63 - ELECTRIC SWITCHGEAR

McCLELLAN – 64 - EMERGENCY GENERATOR WITHOUT REQUIRED CLEARANCES

JEFFERSON ELEMENTARY SCHOOL

875 Old Clairton Road
Jefferson Hills, PA 15025-3131
Principal: Mr. Christopher Very
Enrollment: +/- 555

Jefferson Elementary School – Grades K-5:

- **General Condition**
  - Jefferson Elementary School was erected in the 1993. It has never been renovated.
  - Jefferson Elementary School is on 90.7 acre parcel (contiguous to the District Administration Offices); located on a flattened site on the crest of a hill in a rural area of Jefferson Hills Borough.

Site Summary:

- **Safety**
  - No safety hazards are identified at this time.
- **Site Grading and Drainage**
  - The site appears to be adequately graded and there are no indications of poor drainage; repair is ongoing.
  - There are drainage issues at the exterior stairs leading to the boiler room; the paving directs storm water run-off into the stair well, and a poorly functioning roof drain leader further compounds the problem.
- **Pavement and Sidewalk Management**

    - Pavement in general shows typical evidence of wear and weathering damage from age/ use and is in fair condition.
  - **Foundation and Geotechnical Issues**
    - No significant building foundation issues reported or noted to date.

Building Summary:

- Jefferson Elementary School is a two story academic classroom building which houses the typical compliment of elementary school scheduled spaces which includes but is not limited to: General Classrooms, Special Education Classrooms, Library/ Media Center, Cafeteria, Auditorium, Gymnasium, Art Classrooms, Music Classrooms, and Computer Labs. There is a basement Boiler Room and a penthouse that houses mechanical equipment.

- **Exterior Building Evaluation**
  - The building consists of steel frame construction with a brick masonry veneer exterior.
  - The building envelope is showing signs of deterioration and compromise of the thermal envelope.
  - The masonry veneer is in need of spot pointing. The coping on the front masonry pier(s) is damaged/ missing which is causing substantial spalling damage to the brick from moisture infiltration and freezing.
  - The Exterior Insulation Finish System (EFIS) is in need of replacement.
  - The aluminum storefront entry systems are in fair condition.
  - The exterior doors and frames are in need of replacement.
  - The window systems are losing their gasket seals and should be repaired and/or replaced within 5-10 years.
  - The fully adhered EPDM (Ethylene Propylene Diene Monomer) single-ply rubber membrane system is beyond its useful life and is beginning to catastrophically fail. A significant portion of the front membrane tore-free earlier this year and needed to be temporarily repaired. The roofing system is no longer under warranty. The roofing system is in need of full replacement.
  - The metal roofing system and metal gutter system is in need of replacement and/or repairs as required.

- **Interior Building Evaluation**
  - The interiors of the building are in generally fair condition and are only in need of continued maintenance with the following exceptions:
    - The terrazzo and ceramic tile in the corridors and common areas are in fair to good condition and should be maintained.
    - The Vinyl Composition Tile (VCT) in all of the classrooms will be nearing the end of their useful life and should be replaced within the next 5-10 years.
    - The Acoustical Ceiling Tile System (ACT) in the corridors and in all of the classrooms will be nearing the end of their useful life and should be replaced within the next 5-10 years. Cupping of the ACT is evident due to humidity.
    - The interior doors, frames, and hardware in the corridors and in all of the classrooms will be nearing the end of their useful life and should be replaced within the next 5-10 years.
    - The classrooms and small group instructional spaces are all in need of updated finishes and programmatic upgrades.
    - The toilet rooms are in need of updated finishes and fixtures

    - The music classrooms are in need of updated finishes and programmatic upgrades including acoustical treatments.
    - The computer lab is in need of updated finishes and programmatic upgrades.
    - The Library/ Media Center is in need of updated finishes and programmatic upgrades.
    - The Cafeteria is in need of updated finishes and acoustical treatment.
    - The Gymnasium is in need of acoustical treatments.
    - The Locker rooms are in need of updated finishes and fixtures.
    - The Staff resources including the copy room, teacher workroom, and staff offices are all in need of updated finishes and programmatic upgrades.

- **Americans with Disabilities Act Accessibility Guidelines (ADAAG)**
  - In general the entrances to the building do comply with ADAAG.
  - The building is a two story structure with scheduled spaces on both floors. Access is gained to the second level by way of newly installed elevator.
  - All of the classroom spaces have the required door clearances and/or hardware.
  - The toilet rooms appear to comply with ADAAG.
  - The audible and visual components of the fire alarm system <u>do not</u> comply with ADAAG or National Fire Protection Association (NFPA) codes..

Mechanical Summary:

- **Heating, Ventilating, and Air Conditioning (HVAC) Systems**
  - Jefferson elementary school was constructed in 1993. Being relatively new, there are few major issues with the HVAC, plumbing, or fire protection systems.
  - Although the systems are generally operating in a satisfactory manner, they are close to being 20 years old and as such will soon be in need of replacement. In essence, one wing of the building is substantially air-conditioned, while the other area is not. The design drawings show that the second wing was set up for "future air-conditioning." However the condensing units were never installed.
  - (2) Small AC split systems were added about 2 years ago for the 1st & 2nd floor teachers' lounges.
  - The majority of the air-conditioned space is provided by air handling unit S-3, and condensing unit CU-3. This system is rated at 100 tons capacity. CU-3 has two compressors of 50 ton capacity each. The building maintenance person, Gene Paxon, reports that one of the two compressors has been inoperative for some period of time. Our inspection revealed that the compressor has physically been removed. Therefore, this unit operates on only one half its rated capacity. A new compressor or totally new condensing unit should be installed.
  - While the basic school design is adequate and the heating system can be expected to have another decade or two of useful life, it would be relatively straightforward to replace existing condensing units and to install the condensing units that were planned for the 'future'.
  - The air handling units are well maintained and so adding the condensing units and refrigeration piping could easily provide cooling for the entire school.
  - The boiler room cannot be used for storage of combustible materials. (IFC Section 315.2.3)

- During humid weather the cold supply air will cause the air diffusers located in areas near the ventilated only space to condense and drip moisture. There is no easy fix for this other than to provide cooling to the remainder of the building.
- The controls should be upgraded to a web based HVAC system so that maintenance staff at each school can access units schedule and set points via a laptop computer.
- The only access to the boiler room is from outside the building which in inclement weather, especially heavy snow, delays access until snow can be removed from path and doorway swing. Installation of a new roof canopy is recommended to prevent snow from accumulating in the stairwell.

- **Exhaust Systems**
  - All fans appear to be operational and working as intended.

Plumbing Summary:

- **Plumbing and Fire Protection Systems**
  - The building Plumbing System for the most part is original to the 1993 building construction.
  - The Plumbing fixtures are original and are showing signs of wear.
  - For the most part the Plumbing equipment has reached the end of its expected service life and will need to be replaced if the building is to remain occupied in the next 10 years.
  - The domestic hot water storage tank was replaced with a much smaller one which is adequate. The old steel tank should be removed and sold for scrap. The scrap value should cover the cost of removal.
  - There are limited sprinklers for only the storage and boiler rooms.

Electrical Summary:

- **Service Entrance**
  - The building was constructed in 1993.
  - All electrical systems are 1993 vintage or newer.
  - The main switchboard is a Square D QED style fused switchboard rated at 2500 amp, 480/277V.
  - Power factor correction payback period should be calculated for the School.

- **Emergency Power**
  - A Kohler 80KW, three phase natural gas generator serves life safety and emergency loads. The generator is installed indoors.
  - The interior generator makeup louver is missing the motorized linkage. Therefore it is left open. While this might normally be a concern, Gene reports that even in the winter the space does not get too cold. If replaced, it must open when the generator starts and runs.

- **Fire Alarm System**
  - The building is supplied with an Simplex hardwired 4002 fire alarm system.
  - This system includes (corridors and most rooms) smoke detector coverage and older style horns and strobes.
  - The horns and strobes do not meet present ADA and NFPA codes.

- **Lighting**
  - Lighting throughout the facility is primarily fluorescent.
  - The majority of the fixture types are lay in ceiling, acrylic diffuser.
  - The lamp types are mostly the T12 style. T12 lamps and ballasts are rapidly being phased out of production.
  - WJHSD site personnel confirmed that the T12 lamps have been increasing in price and suppliers have indicated that the T12 may not be available at some point in time.
  - Most lamps are linear with each classroom having two U-style T12 lamps.

- **Telecommunication/ Technology**
  - Note: Telecommunication and Technology were evaluated as part of a District-Wide Technology Feasibility Study; The District is currently implementing Phase I which upgrades the District Administration Office Building and Thomas Jefferson High School (Appendix).
  - It has been reported that the central paging system is not fully operational and is in need of replacement.

Issues of Immediate Concern at the Jefferson Elementary School:

High Priority:

Issue No.1:
- The fully adhered EPDM roofing system is beyond its effective useful life and is actively failing/ leaking.

Consequence:
- Water infiltration into the buildings can cause superficial damage to interior finishes; prolonged leaking can cause damage to the building structure and create poor indoor air quality concerns.

Recommended Next Step:
- The roofing systems should be replaced.

Issue No.2:
- There are T12 fluorescent lighting fixtures and ballasts are throughout the building.

Consequence:
- The T12 fluorescent lighting fixtures and ballasts will become cost prohibitive to maintain.

Recommended Next Step:
- Phasing out the T12 fluorescent lighting fixtures should be considered.

Issue No.3:
- The condensing unit CU-3 is rated for 100 tons but only has one of two (2) required compressors.

Consequence:
- A condensing unit working at half capacity is inefficient and will lead to mechanical failure.

Recommended Next Step:
- The required second compressor needs to be supplied and installed; or due to the age of the existing condensing unit it might be a better idea to replace the entire condensing unit.

Issue No.4:
- Building HVAC controls are the original pneumatic controls. The pneumatic controls are beyond their service life expectancy, and should be replaced.

Consequence:
- The pneumatic controls are inefficient and at this age, prone to service breakdowns.

Recommended Next Step:
- Provisions should be made to replace the pneumatic controls in their entirety with full Direct Digital Controls (DDC) controls; and upgrade to a WEB based HVAC system so that maintenance staff at each school can access units schedule and set points via a laptop computer.

Issue No.5:

- The boiler room cannot be used for storage of combustible materials. (IFC Section 315.2.3).

Consequence:

- Storage in boiler room poses a safety hazard and is against code.

Recommended Next Step:

- Remove storage from the boiler room.

Medium Priority:

Issue No.1:

- The building envelope is showing signs of deterioration.

Consequence:

- Air and/or moisture infiltration of the building can compromise the building thermal envelope and can contribute to an unhealthy working environment.

Recommended Next Step:

- Investigate the causes of the building envelope failures and make the necessary corrections.

Issue No.2:

- Automated lighting control was not present. An automated lighting control system should be integrated into future upgrades.

Consequence:

- Currently, without automated lighting controls the building operates inefficiently and does not meet the current energy code.

Recommended Next Step:

- Replacement/ upgrade of the entire building lighting system.

Issue No.3:

- The paging system is reported to have problems sourcing music and other pages out to classrooms.

Consequence:

- The inconsistent/ inability to ready page between the office and respective classrooms is a hazard for student and/or school safety.

Recommended Next Step:

- The school paging system needs to be replaced/ upgraded for the entire building.

Issue No.4:

- Only half of the school is currently air-conditioned.

Consequence:

- Conditioning only half of the school contributes to a lack of parity for the teaching environments from one side of the building to the other. The humid untreated ventilated air can cause condensation issues while migrating to the cooler air-conditioned side of thebuilding.

Recommended Next Step:

- The building could easily be retrofitted to include cooling throughout.

Issue No.5:

- The 4 ton Rooftop Unit (RTU) serving the administrative offices will need to be replaced in the next 2 to 5 years.

Consequence:

- The age and condition of the unit could result in the failure of the equipment; causing discomfort and the inability to maintain the required ventilation.

Recommended Next Step:

- Replace the 4 ton Rooftop Unit RTU within the next 2-5 years.

- **Low Priority**
  - All remaining issues in this evaluation can be considered to be low priority.

JEFFERSON – 1 - MAIN ENTRANCE

JEFFERSON – 2 - TYPICAL EXTERIOR

JEFFERSON – 3 - TYPICAL EXTERIOR

JEFFERSON – 4 - TYPICAL EXTERIOR

JEFFERSON – 5 - TYPICAL EXTERIOR

JEFFERSON – 6 - TYPICAL EXTERIOR INSULATION FINISH SYSTEM (EFIS) PENTHOUSE

JEFFERSON – 7 - MISSING MASONRY PIER COPING

JEFFERSON – 8 - MISSING MASONRY PIER COPING

JEFFERSON – 9 - TYPICAL FULLY ADHERED EPDM MEMBRANE ROOFING SYSTEM

JEFFERSON – 10 - TYPICAL FULLY ADHERED EPDM MEMBRANE ROOFING SYSTEM, EXHAUST FANS, AND A/C CONDENSING EQUIPMENT

JEFFERSON – 11 - STAIRTOWER ROOF

JEFFERSON – 12 - TYPICAL EPDM ROOF DRAIN

JEFFERSON – 13 - CELLULAR CONTROL PANELS

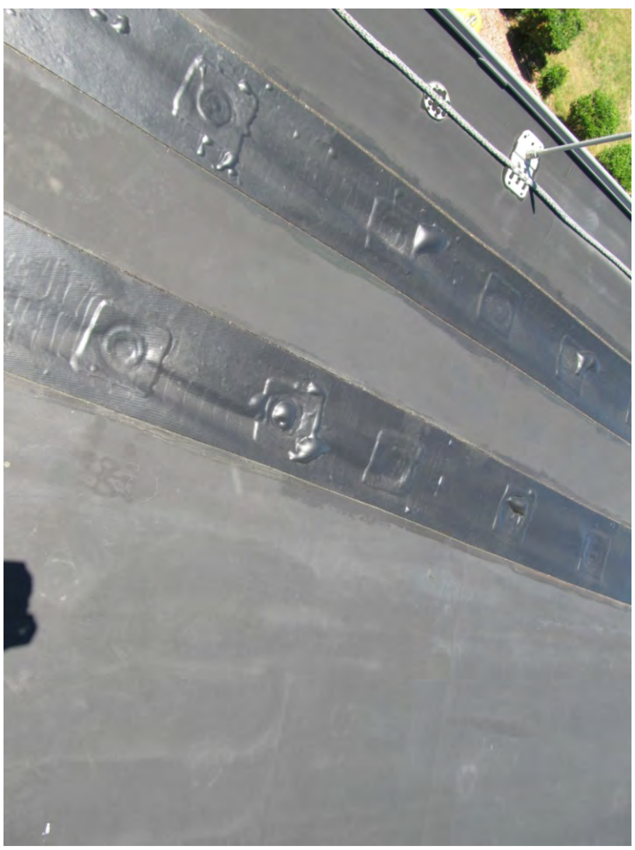
JEFFERSON – 14 - COOLING TOWER

JEFFERSON – 15 - TYPICAL EPDM ROOFING SYSTEM AND EQUIPMENT

JEFFERSON – 16 - TYPICAL STANDING SEAM METAL ROOFING

JEFFERSON – 17 - EPDM FAILURE/ TEMPORARY REPAIR

JEFFERSON – 18 - EPDM FAILURE/ TEMPORARY REPAIR



JEFFERSON – 19 - MAIN ENTRANCE VESTIBULE

JEFFERSON – 20 - MAIN OFFICE

JEFFERSON – 21 - TYPICAL CORRIDOR

JEFFERSON – 22 - TYPICAL CORRIDOR/ ELEVATOR

JEFFERSON – 23 - TYPICAL CLASSROOM

JEFFERSON – 24 - TYPICAL CLASSROOM

JEFFERSON – 25 - COMPUTER LAB

JEFFERSON – 26 - COMPUTER LAB

JEFFERSON – 27 - MUSIC CLASSROOM

JEFFERSON – 28 - MUSIC CLASSROOM

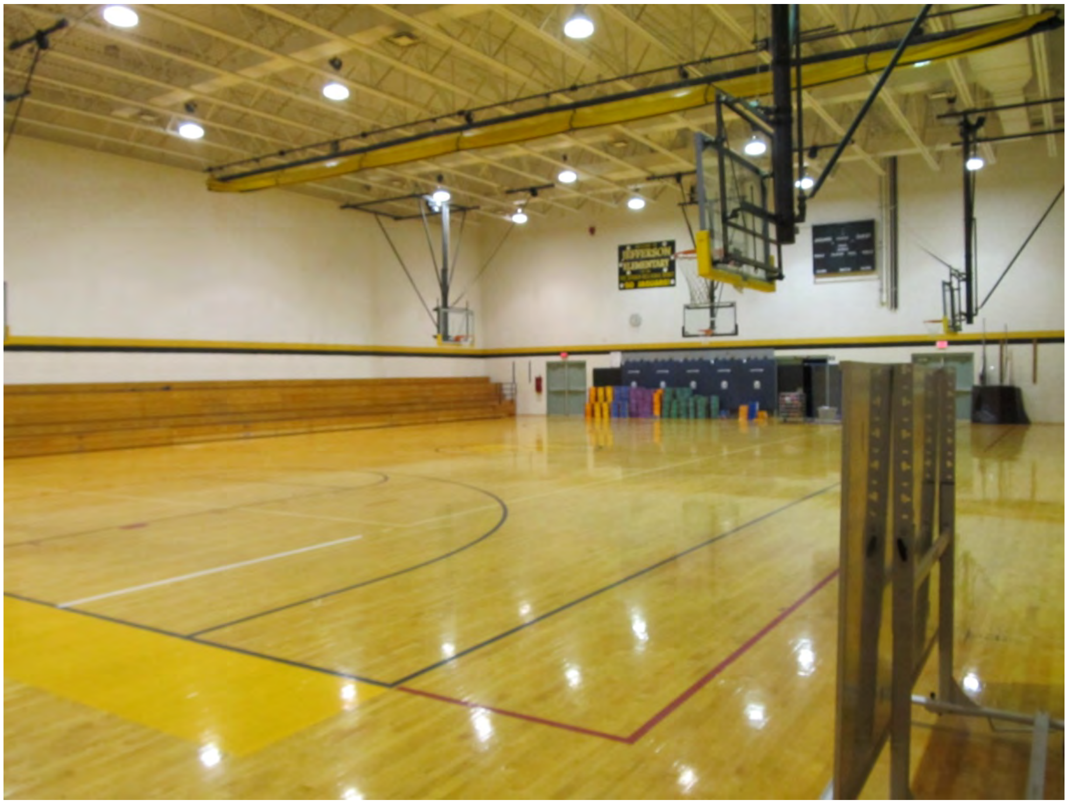
JEFFERSON – 29 - ART ROOM

JEFFERSON – 29 - ART ROOM

JEFFERSON – 30 - LIBRARY/ MEDIA CENTER

JEFFERSON – 31 - LIBRARY/ MEDIA CENTER

JEFFERSON – 32 - GYMNASIUM



JEFFERSON – 33 - GYMNASIUM

JEFFERSON – 34 - MULTIPURPOSE ROOM

JEFFERSON – 35 - MULTIPURPOSE ROOM

JEFFERSON – 36 - SERVING LINE

JEFFERSON – 37 - KITCHEN

JEFFERSON – 38 - KITCHEN

JEFFERSON – 39 - DISHWASHING

JEFFERSON – 40 - TYPICAL TOILET ROOM ENTRY

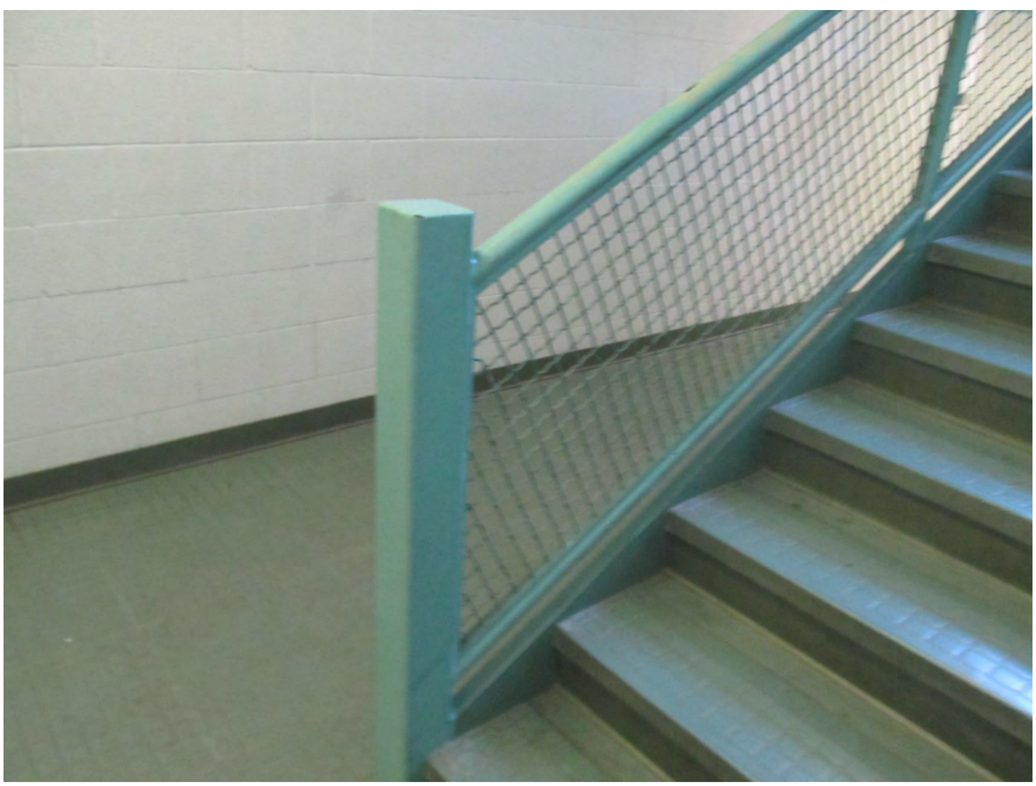
JEFFERSON – 41 - TYPICAL TOILET ROOM

JEFFERSON – 42 - TYPICAL TOILET ROOM

JEFFERSON – 43 - ELECTRIC WATER COOLERS

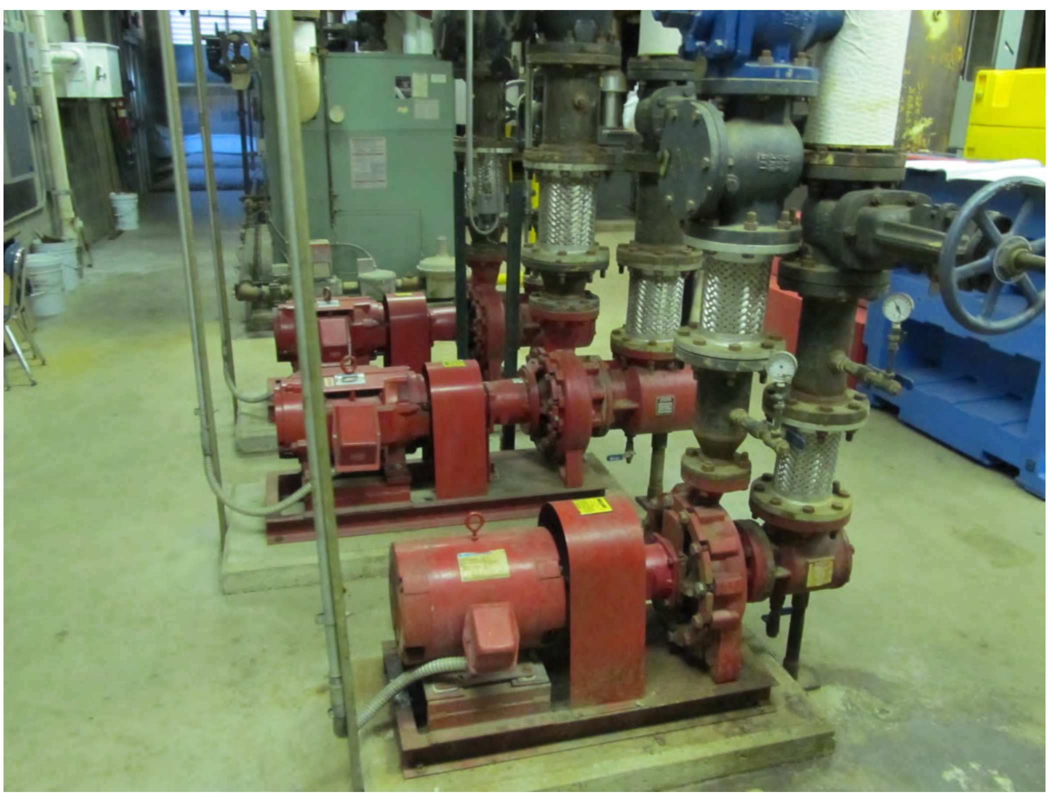
JEFFERSON – 44 - TYPICAL STAIR TOWER

JEFFERSON – 45 - TYPICAL STAIR TOWER



JEFFERSON – 46 - BOILER

JEFFERSON – 47 - HEATING PUMPS



JEFFERSON – 48 - DOMESTIC HOT WATER BOILER/ TANK

JEFFERSON – 49 - DOMESTIC HOT WATER TANK

JEFFERSON – 50 - PNEUMATIC CONTROLS COMPRESSOR

JEFFERSON – 51 – HVAC CONTROLS

JEFFERSON – 52 - PENTHOUSE MECHANICAL UNIT

JEFFERSON – 53 - PENTHOUSE AIR HANDLING UNIT

DISTRICT ADMINISTRATION BUILDING

835 Old Clairton Road
Jefferson Hills, PA 15025

District Administration Building:

- **General Condition**
  - The District Administration offices are located in a freestanding building on a 90.7 acre parcel (contiguous with Jefferson Elementary).
  - The two (2) story building was constructed in 1974 and is located on a steeply sloped site; as a result the building is one story at the front and two stories in the rear

Site Summary

- **Safety**
  - Inadequate pedestrian/vehicle separation in front of building.
  - Limited parking and poor lot layout contribute to conflicts at the main lot.

- **Site Grading and Drainage**
  - In general site drainage is adequate.

- **Pavement and Sidewalk Management**
  - Pavement generally shows evidence of weathering damage and age.

- Most pavements are in fair to poor condition; continued maintenance is required.
- Some paved areas are starting to show evidence of structural failure; these areas will need to be monitored and repaired as required.
- Sidewalks are in fair to poor condition.

- **Foundation and Geotechnical Issues**
  - No significant structural building foundation issues reported or noted to date.
  - Moisture/ water infiltration issues were observed in the basement.

Building Summary:

- District Administration is a two story office building which houses the typical compliment of offices, district storage and conference rooms.

- **Exterior Building Evaluation**
  - The building consists of masonry bearing construction with a brick masonry veneer exterior.
  - The building envelope has not been renovated; as a result there are signs of deterioration and compromise of the thermal envelope.
  - The masonry veneer is in need of spot pointing.
  - The aluminum store front entry systems are failing at the frame connections and should be replaced.
  - The exterior doors and frames are in need of replacement.
  - The window systems are in need of replacement.
  - The exterior louvers have deteriorated and should be replaced.
  - The roofing system is well beyond the end of its useful life and is in need of full replacement.
  - An abandoned antenna on the roof and associated coax cabling posses a hazard on the roof. Some of the cable stays do not appear to be in good condition. Picture 7, Page 258.
  - The roof access ladder presents a safety hazard. It does not have fall protection or a ladder extension handgrip. In addition, the ladder is on the hinge-side of the roof hatch making exit and entry difficult. This is an unsafe condition and should be immediately replaced.

- **Interior Building Evaluation**
  - The interiors of the building are in generally fair condition and are in need of replacement and/or repair:
    - The carpeting in the corridors and/ or common areas are beyond the end of their useful life and should be replaced.
    - The VAT and/or carpeting in all of the offices/ support spaces are beyond the end of their useful life and should be replaced.
    - The Acoustical Ceiling Tile System (ACT) in the corridors and in all of the offices is beyond the end of their useful life and should be replaced.
    - The interior doors, frames, and hardware in the corridors and in all of the offices are beyond the end of their useful life and should be replaced.
    - The administration office/ suite should be reconfigured and upgraded.

  - The offices and conference areas are all in need of updated finishes and programmatic upgrades.
  - The toilet rooms are in need of updated finishes and fixtures.
  - The Large Conference Room (Lower Level) is in need of updated finishes and acoustical treatment.
  - The Staff resources including the copy room, workroom, and staff offices are all in need of updated finishes and programmatic upgrades.

- **Americans with Disabilities Act Accessibility Guidelines (ADAAG)**
  - In general the entrances to the building do not comply with ADAAG.
  - The building is a two story structure with scheduled spaces on both floors. There are no mechanisms to allow a physically challenged person direct access from one floor to the other without going outside into the elements.
  - There are many of the scheduled spaces that do not have the required door clearances or hardware.
  - The toilet rooms do not comply with ADAAG.
  - The audible and visual components of the fire alarm system do not comply with ADAAG or National Fire Protection Association (NFPA) codes.

Mechanical Summary:

- **Heating, Ventilating, and Air Conditioning (HVAC) Systems**
  - The Administration Building was constructed in 1974.
  - Originally the building was used for both office space and for maintenance vehicles on the lower level. This is evidenced by the fact that the lower level was once heated by gas fired unit heaters and although they have been removed or disconnected, the flues from these (4) units are still visible on the roof.
  - At some point the building was converted to all offices, and gas-fired, packaged heating and cooling units were installed on the roof.
  - There are 3 packaged RTUs with cooling and gas heat.
  - There is one small split system.
  - The existing roof top units are nearing the end of their useful life.
  - There is a loose supply-air register in the 2nd floor entry area bulkhead that should be secured.

- **Exhaust Systems**
  - Exhaust fans are power roof ventilator type; they are original, and have exceeded their useful lifespan.

Plumbing Summary:

- **Plumbing and Fire Protection Systems**
  - The building Plumbing System is original to the 1974 building construction.
  - The Plumbing fixtures are original, are outdated, and are showing signs of wear.
  - All of the Plumbing piping is also original to the 1974 construction.
  - For the most part the Plumbing equipment has reached the end of its expected service life and will need to be replaced if the building is to remain occupied into the future.

- All gas piping on the roof should be leak tested then scraped and painted. While small gas leaks located outdoors are not dangerous they are metered and would increase the building's gas bills.
- The building does not contain a fire protection system; at a minimum all areas greater than 100 sf, used for storage, are required to be sprinkled by code.

Electrical Summary:

- **Service Entrance**
  - The building was constructed in 1974, and all electrical systems are original vintage.
  - The main electrical service consists of three fused switches, rated at 200A; 200A and 100A respectively.
  - A Comcast service entrance cabinet is positioned directly in front of the service entrance. Picture 18, Page 263.
  - Power factor correction payback period should be calculated for the School.

- **Emergency Power**
  - Egress lighting is provided via battery packs.

- **Fire Alarm System**
  - The building is supplied with a combined burglar / fire system as manufactured by Guardian systems.
  - One notification bell was observed on the upper floor.
  - The fire alarm horns and strobes do not meet present ADA and NFPA codes.

- **Lighting**
  - Lighting throughout the facility is primarily fluorescent.
  - The majority of the fixture types are lay in ceiling, acrylic diffuser.
  - The lamp types are mostly the T12 style. T12 lamps and ballasts are rapidly being phased out of production.
  - WJHSD site personnel confirmed that the T12 lamps have been increasing in price and suppliers have indicated that the T12 may not be available at some point in time.

- **Telecommunication/ Technology**
  - Note: Telecommunication and Technology were evaluated as part of a District-Wide Technology Feasibility Study; The District is currently implementing Phase I which upgrades the District Administration Office Building and Thomas Jefferson High School (Appendix).

<u>Issues of Immediate Concern at the District Administration Building:</u>

- **High Priority**

Issue No.1:

- The building envelope is showing signs of deterioration and is contributing to the collection of water in the building interior from moisture infiltration.

Consequence:

- Moisture collection and infiltration of the building interior accelerates the deterioration of the building structure and can contribute to poor indoor air quality.

Recommended Next Step:

- Investigate the causes of the building envelope failures and make the necessary corrections. This would minimally include replacing the roof and resolving the moisture issues in the basement.

Issue No.2:

- Most major electrical systems are beyond industry recommended service life; while no obvious hazards were observed, system maintenance is expected to become cost prohibitive.

Consequence:

- Replacement parts will continue to become more costly to obtain and systems failure can be expected to increase in number.

Recommended Next Step:

- Replacement/ upgrade of the entire building electrical system(s).

Issue No.3:

- A Comcast service entrance cabinet is positioned directly in front of the electrical service entrance.

Consequence:

- This issue may present a hazard to anyone attempting to maintain the electrical service. The position is a code violation.

Recommended Next Step:

- The Comcast service entrance should be relocated so that it does not pose a clearance hazard.

Issue No.4:

- There are T12 fluorescent lighting fixtures and ballasts are throughout the building.

Consequence:

- The T12 fluorescent lighting fixtures and ballasts will become cost prohibitive to maintain.

Recommended Next Step:

- Phasing out the T12's should be considered.

Issue No.5:

- The roof access ladder presents a safety hazard.

Consequence:

- The ladder does not have fall protection or a ladder extension handgrip. In addition, the ladder is on the hinge-side of the roof hatch making exit and entry difficult.

Recommended Next Step:

- The roof access ladder should be replaced.

- **Medium Priority**

Issue No.1:

- Automated lighting control was not present. An automated lighting control system should be integrated into future upgrades.

Consequence:

- Currently, without automated lighting controls the building operates inefficiently and does not meet the current energy code.

Recommended Next Step:

- Replacement/ upgrade of the entire building lighting control system(s).

Issue No.2:

- The abandoned antenna and associated coax cabling posses a hazard on the roof. Some of the cable stays do not appear to be in good condition.

Consequence:

- Wind or lightning strikes could cause the tower pieces to fall; and/or cause damage to the aged roofing system.

Recommended Next Step:

- Provisions should be made to remove the abandoned antenna and associated coax cabling.

Issue No.3:

- There is not adequate handicap parking, building access, accessible paths of travel throughout the building, or toilet facilities for persons with disabilities.

Consequence:

- Physically challenged persons have difficulty attending meetings and/or events at the District Administration Offices.

Recommended Next Step:

- Create additional barrier free access and add accessible toilet facilities.

- **Low Priority**
  - All remaining issues in this evaluation can be considered to be low priority.

ADMINISTRATION – 1- MAIN ENTRANCE

ADMINISTRATION – 2 - TYPICAL EXTERIOR: SPALLING BRICK/ EFFERVESCENCE

ADMINISTRATION – 3 - TYPICAL EXTERIOR

ADMINISTRATION – 4 - TYPICAL EXTERIOR

ADMINISTRATION – 5 - TYPICAL EXTERIOR

ADMINISTRATION – 6 - TYPICAL BUILT-UP ROOFING SYSTEM AND EQUIPMENT

ADMINISTRATION – 7 - ROOF EQUIPMENT/ ABANDONED ANTENNA

ADMINISTRATION – 8 - TYPICAL ROOF DRAIN

ADMINISTRATION – 9 - TYPICAL FAILING COPING/ EXPANSION JOINT

ADMINISTRATION – 10 - BUILT-UP ROOFING SYSTEM, FLASHING, AND COPING

ADMINISTRATION – 11 - TYPICAL INTERIOR/ RECEPTION

ADMINISTRATION – 12 - TYPICAL INTERIOR OFFICE AREA

ADMINISTRATION – 13 - TOILET ROOM

ADMINISTRATION – 14 - TOILET ROOM

ADMINISTRATION – 15 - TOILET ROOM

ADMINISTRATION – 16 - ELECTRICA WATER COOLER

ADMINISTRATION – 17 - TYPICAL MECHANICAL UNIT

ADMINISTRATION – 18 - BLUE COMCAST CABINET ENCROCHES/ CONFLICTS WITH THE ELECTRICAL PANELS' REQUIRED CLEARANCES

BUILDING MATERIALS GLOSSARY

A/C Air Conditioner or Air Conditioning

A/C Condenser The outside fan unit of the Air Conditioning System.

A/C Disconnect The main electrical ON-OFF switch near the A/C Condenser.

ACT Acoustical Ceiling Tile – The key component in an acoustical suspended ceiling system. Typically ACT is available in 24”x 24” or 24”x 48” sizes.

ADA Americans with Disability Act

ADAAG ADA Accessibility Guidelines

ANSI American National Standards Institute

ASTM American Society for Testing & Materials

Backfill The replacement of excavated earth into a trench around or against a basement /crawl space foundation wall.

Ballast A transformer that steps up the voltage in a florescent lamp.

Base A finished trim material placed against the wall around the room next to the floor.

Batt A section of fiber-glass or rock-wool insulation.

Brick Lintel The metal angle iron that brick rests on, especially above a window, door, or other opening

Brick Mold Trim used around an exterior door jamb that siding butts to

Brick Tie Corrugated metal or wire inserted into the grout mortar joint of the veneer brick, and holds the veneer wall to the sheeted wall behind it.

Brick Veneer A vertical facing of brick laid against and fastened to sheathing of a framed wall or tile wall construction.

Bridging Small wood or metal members that are inserted in a diagonal position between the floor joists or rafters at mid-span for the purpose of bracing the joists/rafters & spreading the load

Built-Up Roof A roofing system composed of three to five layers of asphalt felt laminated with coal tar, pitch, or asphalt. The top is finished with crushed slag or gravel. Generally used on flat or low-pitched roofs

Caisson A cast-in-place concrete and re-bar foundation/ pier; drilled into earth and embedded into bedrock.

Caulking	A flexible material used to seal a gap between two surfaces
CCA	Chromated Copper Arsenate: A pesticide that is forced into wood under high pressure to protect it from termites, other wood boring insects, and decay caused by fungus
Ceiling Joist	One of a series of parallel framing members used to support ceiling loads and supported in turn by larger beams, girders or bearing walls
Cement	The gray powder that is the "glue" in concrete. Portland cement
Ceramic Tile	A man-made or machine-made glazed and/or fired clay tile used to finish a floor or wall
CFM	Cubic Feet per Minute: The volume of air (measured in cubic feet) that can pass through an opening/ fan in one minute
Control Joint	An expansion joint in masonry, concrete, drywall, or other material(s) which allows movement due to expansion and contraction.
Chase	A framed enclosed space in a wall or through a ceiling; for something (I.E. Piping, wiring, and/or metal ducts) to lie in or pass through adjacent construction.
Circuit	The path of electrical flow from a power source through an outlet and back to ground; an individual power loop which extends from a panel board originating from its respective Circuit breaker.
Circuit Breaker	A device which looks like a switch and is usually located inside the electrical breaker panel or circuit breaker box is designed to (1) shut of the power to portions or all of the house and (2) to limit the amount of power flowing through a circuit (measured in amperes).
Class "A"	Optimum fire rating issued by Underwriter's Laboratories
Class "C"	Minimum fire rating issued by the Underwriters' Laboratories
Clean out	An opening providing access to a drain line. Closed with a threaded plug.
CMU	Concrete Masonry Unit. (See Concrete Block).
Cold Air Return	The ductwork (and related grills) that carries room air back to the furnace for re-heating
Combustion Air	The duct work installed to bring fresh, outside air to the furnace and/or hot water heater.
Compressor	A mechanical device that pressurizes a gas in order to turn it into a liquid, thereby allowing heat to be removed or added. A compressor is the main component of conventional heat pumps and air conditioners. In an air conditioning system, the compressor normally sits outside and has a large fan (to remove heat).

Concrete	The mixture of Portland cement, sand, gravel, and water.
Concrete Block	A solid or hollow concrete 'brick' often 8" x 16" in size and in widths of 4”, 6”, 8”, 10”, and 12”.
Concrete Board	A panel made out of concrete and fiberglass usually used as a tile backing material.
Condensation	Beads or drops of water (and frequently frost in extremely cold weather) that accumulate on the inside of the exterior covering of a building.
Condensing Unit	The outdoor component of a cooling system. It includes a compressor and condensing coil designed to give off heat.
Conduction	The direct transfer of heat energy through a material.
Conduit	A pipe, usually metal, in which wire is installed
Control Joint	Intentional horizontal or vertical breaks in material usual finished with sealant; designed to "control" the effects of minor expansion and contraction of materials.
Convection	Currents created by heating air, which then rises and pulls cooler air behind it. Also see radiation
Cooling Load	The amount of cooling required to keep a building at a specified temperature during the summer, usually 78° F, regardless of outside temperature.
Counter Flashing	A metal flashing usually used on transitions/ openings of the exterior envelope to cover flashing and used to prevent moisture entry into the building
Course	Parallel layers of building materials such as bricks, or siding laid up horizontally
Cricket	A second roof built on top of the primary roof to increase the slope of the roof or valley
Cross Bridging	Diagonal bracing between adjacent floor joists, placed near the center of the joist span to prevent joists from twisting
Dampproofing	The black, tar like waterproofing material applied to the exterior of a foundation wall.
Dead bolt	An exterior security lock installed on exterior entry doors that can be activated only with a key or thumb-turn.
Dedicated Circuit	An electrical circuit that serves only one appliance (ie, dishwasher) or a series of electric heaters or smoke detectors
De-humidistat	A control mechanism used to operate a mechanical ventilation system based upon the relative humidity in the home.

Disconnect	A large (generally 20 Amp) electrical ON-OFF switch
Double Hung Window	A window with two vertically sliding sashes, both of which can move up and down.
Downspout	A pipe, usually of metal, for carrying rainwater down from the roof's horizontal gutters
Drywall	**or Gypsum Wallboard (GWB), Sheet rock or Plasterboard)-** Wall board or gypsum- A manufactured panel made out of gypsum plaster and encased in a thin cardboard. Used for covering metal framing to create wall and/or ceiling surfaces.
Ducts	Usually round or rectangular metal pipes installed for distributing warm (or cold) air from the mechanical units to the respective rooms.
Easement	A formal contract which allows a party to use another party's property for a specific purpose
Eaves	The horizontal exterior roof overhang.
EFIS	Exterior Finish Insulation System: Mechanically fastened or adhered rigid insulation on the exterior of a building with a synthetic polymer stucco coating.
Egress	A means of exiting a building; particularly during an emergency.
Expansion Joint	A joint or gap between adjacent parts of a building, structure, or concrete work which permits their relative movement due to temperature changes (or other conditions) without rupture or damage.
EPDM	Ethylene Propylene Diene Monomer single-ply rubber membrane roofing system. Used primarily on flat roofs .
Evaporator Coil	The part of a cooling system that absorbs heat from air the system. Also see condensing unit.
EWC	Electrical Water Cooler
Expansion Joint	Intentional horizontal or vertical breaks in material usual filled with compressible material and finished with an expansion cover; designed to "control" the effects of major expansion and contraction of materials/ structures.
Expansive Soils	Earth that swells and contracts depending on the amount of water that is present. ("Betonite" is an expansive soil).
Facing brick	The brick used and exposed on the outside of a wall.
Fascia	Horizontal boards attached to rafter/truss ends at the eaves and along gables.

Floor Drain	A fixture providing an opening in a floor to drain water into a plumbing system
Fire block	Short horizontal members sometimes nailed between studs, usually about halfway up a wall. See also 'Fire stop'
Fire-resistive Fire rated	Applies to materials that are not combustible in the temperatures of ordinary fires and will withstand such fires for at least 1 hour.
Fire stop	A solid, tight closure of a concealed space, placed to prevent the spread of fire and smoke through such a space.
Flashing	Sheet metal or other material used in roof and wall construction to protect a building from water seepage.
Flatwork	Common word for concrete floors, driveways, basements, and sidewalks.
Flue	Large pipe through which fumes escape from a gas water heater, furnace, or fireplace
Flue damper	An automatic door located in the flue that closes it off when the burner turns off; purpose is to reduce heat loss up the flue from the still-warm furnace or boiler
Fluorescent Lighting	A fluorescent lamp is a gas-filled glass tube with a phosphur coating on the inside. Gas inside the tube is ionized by electricity which causes the phosphur coating to glow. Normally with two pins that extend from each end.
Footer, Footing	Continuous concrete pad installed before and supports the foundation wall or monopost
Foundation Ties	Metal wires that hold the foundation wall panels and rebar in place during the concrete pour.
Foundation Waterproofing	High-quality below-grade moisture protection. Used for below-grade exterior concrete and masonry wall damp-proofing to seal out moisture and prevent corrosion. Normally looks like black tar.
Frost line	The depth of frost penetration in soil and/or the depth at which the earth will freeze and swell. This depth varies in different parts of the country.
Fuse	A device often found in older installations designed to prevent overloads in electrical lines. This protects against fire. See also 'circuit breakers'.
Gable	The end, upper, triangular area of a building, beneath the roof
Galvanized	Zinc based coating for iron or steel which inhibits oxidation (rust).
Gate valve	A valve that lets you completely stop—but not modulate—the flow within a pipe.

GFCI or GFI	Ground Fault Circuit Interrupter- an ultra sensitive plug designed to shut off all electric current. Used in bathrooms, kitchens, exterior waterproof outlets, garage outlets, and "wet areas".
Girder	A large or principal beam of wood or steel used to support concentrated loads at isolated points along its length.
Glazing	The process of installing glass, which commonly is secured with glazier's points and glazing compound.
Grade	Ground level, or the elevation at any given point. Also the work of leveling dirt. Also the designated quality of a manufactured piece of wood.
Grade beam	A foundation wall that is poured @ level with or just below the grade of the earth.
Groundwater	Water from an aquifer or subsurface water source.
Grout	A wet mixture of cement, sand and water that flows into masonry or ceramic crevices to seal the cracks between the different pieces. Mortar made of such consistency (by adding water) that it will flow into the joints and cavities of the masonry work and fill them solid.
Gutter	A shallow channel or conduit of metal or wood set below and along the (fascia) eaves of a building to catch and carry off rainwater from the roof.
GWB	Gypsum Wallboard.
Gypsum Wallboard	Drywall. Wall board or gypsum- A panel (normally 4' X 8', 10', 12', or 16')made with a core of Gypsum (chalk-like) rock, which covers interior walls and ceilings.
Insulation	Material such as fiberglass, mineral wool, cellulose, foam, or urethane; used to slow the transfer of heat or sound through walls and/or a roof structure.
NFPA	National Fire Protection Association
Plastic Laminate	Resin-impregnated layers, fused together under heat and pressure to form a hard, durable, decorative finished surface material; which is often used as a veneer for cabinetry and/or countertops.
Plywood	A structural material made of layers of wood glued together, usually with the grains of adjoining layers at right angles to each other. A flat sheet-good in various thicknesses; typically fabricated and sold in 4’x8’ sheets.
PSF	Pounds Per Square Foot
PSI	Pounds Per Square Inch

PVC	Polymer of Vinyl Chloride is tasteless, odorless; insoluble in most organic solvents; a member of the family of vinyl resins; used in soft flexible films for food packaging and in molded rigid products such as pipes, fibers, upholstery, and bristles.
Quarry Tile	Unglazed ceramic tile, machine-made by the extrusion process from natural clay or shales; often used in kitchen and/or service areas.
R Value	A measure of a materials resistance to the passage of heat. The higher the R value, the more insulating "power" it has.
Sanitary Sewer	A sewer system designed for the collection of waste water from the bathrooms, kitchens and laundry drains, etc.; sanitary sewers are to be independent of the storm sewers.
SBS 2-PlyModified Roofing System	Styrene Butadiene Styrene polymer-modified bitumen membrane roofing system is a two layer system consisting of reinforced asphalt sheets that are either hot mopped, torched, or installed with cold adhesive(s). The cap (top) sheet is often coated with mineral surfacing (similar to asphalt shingles) to protect the cap sheet from Ultraviolet (UV) exposure/ degradation.
Sheathing	The structural wood sheeting/ paneling and/or covering; I.E. plywood or oriented strand board (OSB); which is installed on wall studs, on top of floor joists or roof joist and/or trusses of a structure.
STC	Sound Transmission Class, The measure of sound stopping of ordinary noise through a specific material and/or assembly.
Storm Sewer	A sewer system designed to collect and convey storm water from a structure and/or site. The storm sewer is to be independent/ separated from the waste water system.
Suspended Acoustical Ceiling	A ceiling system typically consists of a suspended metal grid which is in-filled with a finished, pressed mineral fiber panel. Suspended systems are typically based on a 24” x 24” or 24” x 48” module.
Vapor barrier	A building product installed on exterior walls and roof systems on the warm side of the thermal insulation; A vapor barrier is used to help prevent the free movement of water vapor through the building envelope. Proper placement of a vapor barrier will retard the movement of water vapor into walls/ roof and prevent condensation within the building structure.
Vent	A pipe or duct which allows the flow of air and gasses from the interior to the outside of a structure.
Vermiculite	A mineral fiber used as bulk insulation and also as aggregate in insulating and acoustical plaster and in insulating concrete floors.
Water closet	(WC) Another name for toilet.

Water meter pit (or vault) The box /cast iron bonnet and concrete rings that contains the water meter.

Weep holes Small holes in masonry and/or window frames/ systems which allow moisture trapped in a wall to escape.

UL Underwriters Laboratory

VCT Vinyl Composition Tile is a material which is PVC based and blended with limestone dust and pigments to create a decorative, durable flooring material.

APPENDIX

- **System Components Data**

    - An on-site visit was conducted at each the mentioned buildings and an assessment to their condition and operational functions were reviewed and analysis for this report along with the follow table from ASHRAE for the estimates of service life of various system components.

Table 3 Estimates of Service Lives of Various System Components[a]

Equipment Item	Median Years	Equipment Item	Median Years	Equipment Item	Median Years
Air conditioners		Air terminals		Air-cooled condensers	20
Window unit	10	Diffusers, grilles, and registers	27	Evaporative condensers	20
Residential single or split package	15	Induction and fan-coil units	20	Insulation	
Commercial through-the-wall	15	VAV and double-duct boxes	20	Molded	20
Water-cooled package	15	Air washers	17	Blanket	24
Heat pumps		Ductwork	30	Pumps	
Residential air-to-air	15[b]	Dampers	20	Base-mounted	20
Commercial air-to-air	15	Fans		Pipe-mounted	10
Commercial water-to-air	19	Centrifugal	25	Sump and well	10
Roof-top air conditioners		Axial	20	Condensate	15
Single-zone	15	Propeller	15	Reciprocating engines	20
Multizone	15	Ventilating roof-mounted	20	Steam turbines	30
Boilers, hot water (steam)		Coils		Electric motors	18
Steel water-tube	24 (30)	DX, water, or steam	20	Motor starters	17
Steel fire-tube	25 (25)	Electric	15	Electric transformers	30
Cast iron	35 (30)	Heat exchangers		Controls	
Electric	15	Shell-and-tube	24	Pneumatic	20
Burners	21	Reciprocating compressors	20	Electric	16
Furnaces		Package chillers		Electronic	15
Gas- or oil-fired	18	Reciprocating	20	Valve actuators	
Unit heaters		Centrifugal	23	Hydraulic	15
Gas or electric	13	Absorption	23	Pneumatic	20
Hot water or steam	20	Cooling towers		Self-contained	10
Radiant heaters		Galvanized metal	20		
Electric	10	Wood	20		
Hot water or steam	25	Ceramic	34		

Notes: 1. ASHRAE makes no claims as to the *statistical* validity of any of the data presented in this table.
2. Table lists base values that should be adjusted for local conditions (see the section on Service Life).

Source: Data obtained from a survey of the United States by ASHRAE Technical Committee TC 1.8 (Akalin 1978).
[a] See Lovvorn and Hiller (1985) and Easton Consultants (1986) for further information.
[b] Data updated by TC 1.8 in 1986.

Loftus ENGINEERS
JC PIERCE llc
555 North Bell Avenue ▪ Carnegie PA 15106 ▪ PHONE 412.489.9100 ▪ FAX 412.429.6474 WWW.LOFTUSLLC.COM

West Jefferson Hills

School District

WEST JEFFERSON HILLS
WJHSD
ADMINISTRATION BUILDING
835 OLD CLAIRTON ROAD
JEFFERSON HILLS, PA 15025
PHONE: 412-655-8450
FAX: 412-655-9544
WEST ELIZABETH - JEFFERSON HILLS - PLEASANT HILLS

Technology Infrastructure Report and Budgetary Construction Cost Estimates

Prepared By:
John Reese, PE, RCDD
Loftus Engineers, LLC
Vice President and Electrical Department Manager
555 North Bell Avenue
Carnegie, PA 15222
March 12, 2012

Background

The purpose of this report was to identify the state of technology infrastructure, including structured cabling and network electronics across the school district and develop construction budgets for proposed upgrades to the systems. This report does not address server or desktop hardware or software.

The need for an in depth analysis of the network infrastructure was identified by a Technology Audit published by the Allegheny Intermediate Unit (dated October, 2011). After conducting detailed field investigations of each building's cabling infrastructure, if was confirmed that in general the cabling infrastructures have been installed in non-standard compliant methods, with the exception of Pleasant Hills Middle School. As noted in the Audit, a properly designed and installed "structured cabling system" consists of wiring closets which contain wall or floor mounted equipment racks, patch panels to terminate the cabling, wire management devices, cables installed through the ceiling within cable trays or j-hooks, surface mounted raceways within the classrooms to wall box, device plates, RJ45 outlets, and the use of patch cords on either end.

Furthermore, to meet code, the cabling must be properly rated for the environment which it is installed, by use of plenum rated cabling in ceilings being used as plenum air returns which is violated in some cases. Also to meet BICSI and IEEE industry standards, all cables must be properly installed at a workstation device outlet and in the wiring closet on patch panels and must be within 295 feet total distance. Although most of the school's networks may be functional to some level, they violate these principles in many cases. The cabling is haphazardly installed in the ceilings, laying directly on ceiling tiles and in many cases plugs directly into a local Ethernet switch, without the use of patch panels, wire management devices, or patch cords. Cable trays exist at both McClellan and Gill Hall Elementary Schools, but were not fully utilized for any of the data cabling infrastructure.

It appeared the networks have grown over time and were expanded as needed without regard to a structured cabling approach. This fact, in addition to the mixture of network electronics across the district, makes it extremely difficult to manage the infrastructure with any sort of trouble shooting capabilities.

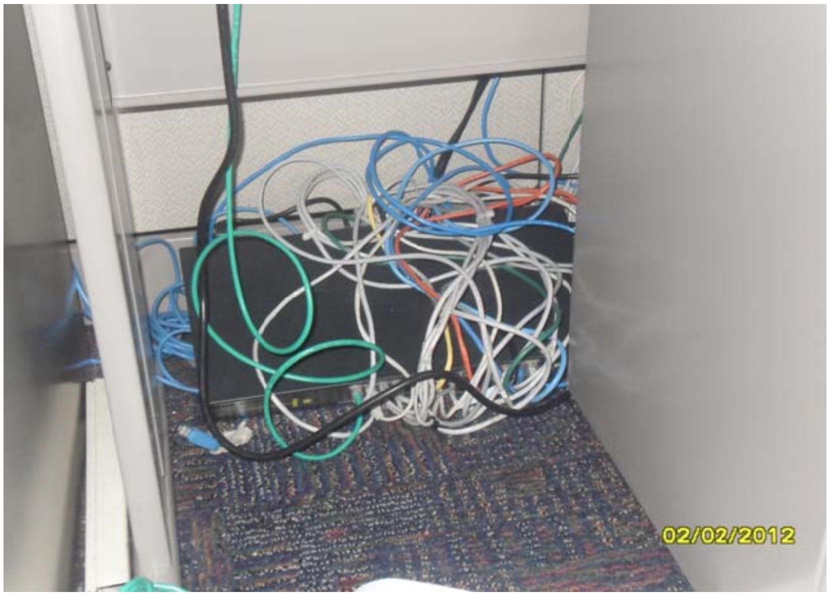
In all cases, it appears fiber optic cables were installed in limited capacity in a daisy-chain fashion between network switch locations. This method of installation by nature limits the allowable bandwidth capacity in the backbone between wiring closets.

In addition to the physical location of many of the network switches, some spaces selected as the "wiring closet" are not properly ventilated or cooled. In some instances, there are equipment cabinets mounted within computer labs that are air-conditioned and these cabinets could remain the wiring closet location in a future installation.

Below are a few examples illustrating the state of the installations.

Thomas Jefferson High School – Computer Lab switch laying on floor without cable terminations or wire management.

Jefferson Elementary – Computer Lab Cabinet without cable management or proper terminations



Administration Building – First Floor Switch on floor behind system furniture.

Gill Hall Elementary – Wall Mounted Equipment Cabinet in Computer Lab.

Recommendations:

- Install BICSI and IEEE standard-compliant structured cabling systems in all buildings. The exception is Pleasant Hills Middle School which is to remain and be expanded and supplemented with proper fiber optic cabling between Telecom Closets. There are also salvageable parts of the existing cabling infrastructure in both Gill Hall and McClellan Elementary, including the wiring within the computer labs. One of the network closets in Gill Hall needs to be re-located due to the heat and dirty environment it is presently in. These items will be further defined in the design phase of the projects. All new structured cabling infrastructures shall use standard compliant Category 6 rated components and connectivity.
- Establish Telecom Closets or wiring closets with proper wire terminations and management devices.
- Install cables in pathways, including existing cable trays where available, j-hooks and surface mounted raceways. For Jefferson Elementary, install basket type cable trays above the accessible ceiling.
- Install dedicated fiber optic cables between Telecom closets, using 10 Gigabit Ethernet multi-mode fibers between the designated Main Communications Closet and each Telecom Closet within the school in a star-type topology to greatly enhance internal network bandwidth.
- Install a consistent Network Electronic switching platform across the School District with network management software and tools to enable trouble shooting.
- Install Layer 3 stackable Ethernet switches (such as Cisco 3750) in the designated main communications closet and Layer 2 stackable Ethernet switches (such as Cisco 2960) in the remaining building Telecom closets. Provide 10Gigabit fiber uplinks between closets. The overall port count of the buildings does not economically warrant the use of chassis based switches.
- Increase Wide Area Network bandwidth supplied by Comcast from 1 Gigabit Shared to dedicated 1 Gigabit to each school. This proposed cost is not reflected in this report, but is currently being reviewed by the Technology Director.
- Install rack-mounted smart Uninterruptible power supply (UPS) units in each Telecom Closet for back-up power to protect network electronics from power surges and other brief glitches and outages.
- Budgetary pricing includes increasing the data port count by (4) data outlets for each classroom, as noted and discussed with the Technology Director. The proper locations of these data outlets will need to be discussed with the school board and teachers as part of the final design process. These devices will be mounted in a surface mounted metallic raceway. Add alternate budget pricing was provided to include (4) electrical outlets also mounted within the same surface raceway (with a divider for each wiring compartment) to enable computers to be plugged in. In general observation, there are plenty of power outlets within the classrooms; however, they may not be at the proper locations depending on the placement chosen for the data outlets in

each school. Final design parameters may dictate the amount of power outlets desired to be added.

- Provide power injectors to provide power-over-Ethernet (POE) ports to existing Wireless Access Points, eliminating the need for 120 volts local to the access points and in the ceilings.
- Add alternate budget pricing was provided to install Power-over-Ethernet (POE) enabled switches in each wiring closet with estimated port counts to power both the existing Wireless Access Points and future Voice-over-IP telephones which could be implemented as part of a telephone system replacement project. This capability was mentioned in the Technology Audit. These switches could be added at the time of any such implementation of an IP Telephony system, but was worth mentioning here in case it is a consideration and the economies of scale could aid in the procurement and installation of the infrastructure for such system.
- Provide supplemental cooling units or ventilation fans to properly condition the Telecom wiring closets. Further assessment will be made during the final design phase of the project, but budgetary pricing was provided to allow for addressing instances where needed.
- In the case of Jefferson Elementary School, provide air-conditioning for the (2) computer labs and (2) resource centers which seem to be the only computer lab spaces that are unconditioned throughout the school district.
- Provide testing and commissioning of all systems, structured cabling per Category 6 standards and a 20 Year Warranty on the cabling infrastructure.
- Consider implementation of video streaming technology based on anticipated future needs; this is not presently represented in the pricing.

All proposed recommendations noted in the bullet items above have been developed into the opinion of probable construction cost estimates. These are indicated for each building in the “Opinion of Probable Construction Cost Summary Sheet”. Furthermore, each line item on the summary sheet correlates to a breakdown estimate sheet by building and system.

Phasing can be approached in many ways and the summary sheet merely suggests a phasing plan for the implementation of the construction. However, it is recommended the High School, Jefferson Elementary School, and Administration Building are considered higher priority and addressed in the first phase of the work. It makes sense to do several buildings grouped together over the next couple of years, as opposed to doing all in one construction season.

One final note with regards to Jefferson Elementary is this study does not address the option of providing air-conditioning for the entire school building. It only addresses the computer lab and telecom closet spaces which need cooling. Obviously, if there is a decision pending to air-condition the entire school, it would not make sense to spend money on HVAC for these rooms individually at this time and would be more advantageous to roll these items into a larger HVAC/Electrical upgrade project.

ESTIMATE OF PROBABLE CONSTRUCTRUCTION COST SUMMARY SHEET		Sub-Total	5% Contingency	Phasing Escalation 5% per year	Total
Thomas Jefferson High School -Phase 1					
Replace Existing Data Cabling Infrastructure with Cat 6, CMP Cabling This includes (1) single terminated data connection for Teacher's station per Classroom, add an additional (4) single data connection in surface raceway per Classroom for Student use (approx. 20' horizontal run within room) and dedicated data connections for all Computer Lab and Admin area computers. Establish (4) data closets with new racks and patch panel terminations Install dedicated 10Gig fiber optic cable between Main Comm Room and each TR Use j-hooks to install cables, in lieu of the expenditure on cable trays for the HS.		$213,304	$10,665	$0	$223,969
Replace Network Electronics, incl. UPS		$101,442	$5,072	$0	$106,514
Cooling for (4) Telecom Closets		$18,670	$934	$0	$19,604
Sub-Total:					**$350,087**
Add Alternates:					
Add (4) 120V receptacles per Classroom on dedicated 20A circuit in divided raceway per Classroom	Add	$63,219	$3,161	$0	$66,380
Jefferson Elementary School -Phase 1					
Replace Existing Data Cabling Infrastructure with Cat 6, CMP Cabling and increase capacity. This includes (1) single terminated data connection for Teacher's station per Classroom, add an additional (4) single data connection in surface raceway per Classroom for Student use (approx. 20' horizontal run within room) and dedicated data connections for all Computer Lab and Admin area computers. Establish (2) data closets with new racks and patch panel terminations Install dedicated 10Gig fiber optic cable between Main Comm Room and TR Install cable trays and j-hooks above ceilings to support cables.		$146,174	$7,309	$0	$153,483
Replace Network Electronics, incl. UPS		$73,118	$3,656	$0	$76,774
Cooling for (2) Telecom Closets 1st Floor Computer Lab and Resource Center 2nd Floor Computer Lab and Resource Center		$46,210	$2,311	$0	$48,521
Sub-Total:					**$278,777**
Add Alternates:					
Add (4) 120V receptacles per Classroom on dedicated 20A circuit in divided raceway per Classroom	Add	$63,219	$3,161	$0	$66,380
Add Power-over-Ethenet (POE) switches with port counts to support WAPs and future IP-Telephony	Add	$18,500	$0	$0	$18,500

ESTIMATE OF PROBABLE CONSTRUCTRUCTION COST SUMMARY SHEET		Sub-Total	5% Contingency	Phasing Escalation 5% per year	Total
Administration Building -Phase 1					
Replace Existing Data Cabling Infrastructure with Cat 6, CMP Cabling. This includes (1) voice/data outlet per Office or Workstation. Establish (1) or (2) data closets with new racks and patch panel terminations Install dedicated 10Gig fiber optic cable between Main Comm Room and TR Use j-hooks to install cables.		$37,264	$1,863	$0	$39,127
Replace Network Electronics, incl. UPS		$19,237	$962	$0	$20,199
Cooling for (1) Telecom Closet		$4,668	$233	$0	$4,901
Sub-Total:					**$64,226**
Add Alternates:					
Add Power-over-Ethenet (POE) switches with port counts to support WAPs and future IP-Telephony	Add	$15,000	$0	$0	$15,000
Pleasant Hills Middle School -Phase 2					
Maintain Existing Cat 5E Data Cabling Infrastructure and increase capacity using Cat 6 connectivity. This includes an additional (4) single data connection in surface raceway per Classroom for Student use (approx. 20' horizontal run within room) Supplement (5) data closets with new patch panel terminations and wire management Install dedicated 10Gig fiber optic cable between Main Comm Room and each TR Use j-hooks to install cables.		$134,426	$6,721	$6,721	$147,869
Replace Network Electronics, incl. UPS		$122,819	$6,141	$6,141	$135,101
Cooling for (2) Telecom Closets		$18,670	$934	$934	$20,537
Sub-Total:					**$303,506**
Add Alternates:					
Add (4) 120V receptacles per Classroom on dedicated 20A circuit in divided raceway per Classroom	Add	$50,482	$2,524	$2,524	$55,530
Add Power-over-Ethenet (POE) switches with port counts to support WAPs and future IP-Telephony	Add	$32,000	$0	$1,600	$33,600

ESTIMATE OF PROBABLE CONSTRUCTRUCTION COST SUMMARY SHEET		Sub-Total	5% Contingency	Phasing Escalation 5% per year	Total
Gill Hall Elementary School -Phase 2					
Supplement Existing Data Cabling Infrastructure with Cat 6, CMP Cabling and increase capacity. This includes (1) single terminated data connection for Teacher's station per Classroom, add an additional (4) single data connection in surface raceway per Classroom for Student use (approx. 20' horizontal run within room). Existing Computer Lab cabling shall remain. Expand (1) data closets and relocate (1) data closet, provide new racks and patch panel terminations. Install dedicated 10Gig fiber optic cable between Main Comm Room and TR Use j-hooks and existing cable trays to install cables.		$63,626	$3,181	$3,181	$69,988
Replace Network Electronics, incl. UPS		$37,320	$1,866	$1,866	$41,052
Cooling/Ventilation for (2) Telecom Closets		$5,818	$291	$291	$6,399
Sub-Total:					**$117,439**
Add Alternates:					
Add (4) 120V receptacles per Classroom on dedicated 20A circuit in divided raceway per Classroom	Add	$22,743	$1,137	$1,137	$25,018
Add Power-over-Ethenet (POE) switches with port counts to support WAPs and future IP-Telephony	Add	$12,500	$0	$625	$13,125
McClellan Elementary School -Phase 2					
Replace Existing Data Cabling Infrastructure with Cat 6, CMP Cabling and increase capacity. This includes (1) single terminated data connection for Teacher's station per Classroom, add an additional (4) single data connection in surface raceway per Classroom for Student use (approx. 20' horizontal run within room) and dedicated data connections for all Computer Lab and Admin area computers. Establish (2) data closets with new racks and patch panel terminations Install dedicated 10Gig fiber optic cable between Main Comm Room and TR Use j-hooks and existing cable trays to install cables.		$84,109	$4,205	$4,205	$92,520
Replace Network Electronics, incl. UPS		$50,463	$2,523	$2,523	$55,509
Cooling for (2) Telecom Closets		$4,668	$233	$233	$5,134
Sub-Total:					**$153,164**
Add Alternates:					
Add (4) 120V receptacles per Classroom on dedicated 20A circuit in divided raceway per Classroom	Add	$34,384	$1,719	$1,719	$37,822
Add Power-over-Ethenet (POE) switches with port counts to support WAPs and future IP-Telephony	Add	$14,500	$0	$725	$15,225

Thomas Jefferson High School -Phase 1

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

27-Feb-12

THOMAS JEFFERSON HIGH SCHOOL
STRUCTURED CABLING SYSTEM

LABOR HR $75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Structured Cabling												
		Mobilization	ls	1	$3,000.00	$3,000.00	$0.00	$3,000.00	40.000	$0.00	$3,000.00	40
Superior Essex	61110-R*6	Category 6+ UTP Cable, CMP	ft	109125	$0.49	$0.00	$53,471.25	$53,471.25	0.000	$0.49	$0.00	0
Superior Essex	4412AYG01	12-strand, 50micron, Fiber Optic Cable, CMP	ft	850	$1.88	$510.00	$1,088.00	$1,598.00	0.008	$1.28	$0.60	6.8
		1" Plenum Innerduct,corrogated	ft	850	$4.40	$1,912.50	$1,827.50	$3,740.00	0.030	$2.15	$2.25	25.5
Leviton	42080-1IS	SG Faceplate, 1-port, ivory	ea	114	$9.63	$855.00	$242.82	$1,097.82	0.100	$2.13	$7.50	11.4
Leviton		SG Faceplate, 6-port, ivory	ea	27	$9.63	$202.50	$57.51	$260.01	0.100	$2.13	$7.50	2.7
Leviton	41087-2IP	Duplex mounting strap	ea	0	$5.79	$0.00	$0.00	$0.00	0.050	$2.04	$3.75	0
Leviton	61110-RA6	1-RJ45 Jack, 568B, Cat 6+	ea	285	$10.68	$0.00	$3,043.80	$3,043.80	0.000	$10.68	$0.00	0
Leviton	69586-U24	Patch Panel, Cat 6+, 24-port	ea	1	$302.40	$18.75	$283.65	$302.40	0.250	$283.65	$18.75	0.25
Leviton	69586-U48	Patch Panel, Cat 6+, 48-port, 568B	ea	12	$577.53	$225.00	$6,705.36	$6,930.36	0.250	$558.78	$18.75	3
Leviton	49252-PCM	Combo Front and Rear Cable Manager, 2RU	ea	17	$117.75	$318.75	$1,683.00	$2,001.75	0.250	$99.00	$18.75	4.25
Leviton	5R1UH-S03	Opt-X Ultra 1RU Fiber Enclosure	ea	3	$505.25	$225.00	$1,290.75	$1,515.75	1.000	$430.25	$75.00	3
Leviton	5R2UH-S06	Opt-X Ultra 2RU Fiber Enclosure	ea	1	$644.10	$75.00	$569.10	$644.10	1.000	$569.10	$75.00	1
Leviton	5R4UH-S12	Opt-X Ultra 4RU Fiber Enclosure	ea	0	$911.21	$0.00	$0.00	$0.00	1.500	$798.71	$112.50	0
Leviton	5F100-3BC	3-Pack Duplex SC MM (6-fiber) Plate	ea	12	$53.68	$18.00	$626.16	$644.16	0.020	$52.18	$1.50	0.24
Leviton	5F100-6AC	6-Pack Duplex SC MM (12-fiber) Plate	ea	0	$99.88	$0.00	$0.00	$0.00	0.020	$98.38	$1.50	0
Leviton	5F100-BPP	Blank insert panel	ea	4	$7.61	$3.00	$27.44	$30.44	0.010	$6.86	$0.75	0.04
Leviton	49991-LSC	FastCAM SC 50/125 MM Connector	ea	72	$41.99	$1,350.00	$1,673.28	$3,023.28	0.250	$23.24	$18.75	18
Leviton	5LDSC-M03	SC-SC Laser Optimized MM Patch, 3 meters	ea	7	$22.59	$15.75	$142.38	$158.13	0.030	$20.34	$2.25	0.21
Leviton	5LDSC-M05	SC-SC Laser Optimized MM Patch, 5 meters	ea	7	$25.60	$15.75	$163.45	$179.20	0.030	$23.35	$2.25	0.21
Leviton	6D460-03	Cat 6 Slimline UTP Patch Cable, 3 ft.	ea	325	$13.75	$854.75	$3,614.00	$4,468.75	0.035	$11.12	$2.63	11.375
Leviton	6D460-05	Cat 6 Slimline UTP Patch Cable, 5 ft.	ea	325	$15.02	$854.75	$4,026.75	$4,881.50	0.035	$12.39	$2.63	11.375
Leviton	6D460-07	Cat 6 Slimline UTP Patch Cable, 7 ft.	ea	325	$16.25	$854.75	$4,426.50	$5,281.25	0.035	$13.62	$2.63	11.375
Chatsworth		19" Equipment rack	ea	1	$493.60	$300.00	$193.60	$493.60	4.000	$193.60	$300.00	4
Chatsworth		Wall mounted equipment rack, 48"	ea	2	$868.00	$900.00	$836.00	$1,736.00	6.000	$418.00	$450.00	12
Leviton	8980L-VFO	Vertical 80" Channel	ea	2	$860.30	$900.00	$820.60	$1,720.60	6.000	$410.30	$450.00	12
Leviton	P1071-10S	Surge protected Vertical PDU	ea	4	$616.10	$1,800.00	$664.40	$2,464.40	6.000	$166.10	$450.00	24
Erico Prod	CAT12	Category 5 j-hooks	ea	175	$9.15	$1,312.50	$288.75	$1,601.25	0.100	$1.65	$7.50	17.5
Erico Prod	CAT21	Category 5 j-hooks	ea	175	$16.93	$2,625.00	$337.75	$2,962.75	0.200	$1.93	$15.00	35
Erico Prod	CAT32	Category 5 j-hooks	ea	150	$17.48	$2,250.00	$372.00	$2,622.00	0.200	$2.48	$15.00	30
Cisco	AIR-PWRINJ4=	Power Injector for Wireless Access Points	ea	11	$201.40	$412.50	$1,802.90	$2,215.40	0.500	$163.90	$37.50	5.5
Legrand	V2400BD	Divided Steel Raceway, 2400 Base, Ivory	ft	1500	$13.11	$16,875.00	$2,790.00	$19,665.00	0.150	$1.86	$11.25	225
Legrand	V2400C	Steel Racway Cover	ft	1500	$4.97	$5,625.00	$1,830.00	$7,455.00	0.050	$1.22	$3.75	75
Legrand	V2411DFO	Divided Stl Flat FiberReady Elbow	ea	50	$32.29	$750.00	$864.50	$1,614.50	0.200	$17.29	$15.00	10
Legrand	2444D	1G Device Box - Ivory	ea	200	$39.00	$4,500.00	$3,300.00	$7,800.00	0.300	$16.50	$22.50	60
Legrand	V2410BD	Stl Divided End Blank 2400 Ivory	ea	50	$8.46	$375.00	$48.00	$423.00	0.100	$0.96	$7.50	5
Legrand	V500	One-piece Steel Raceway, Ivory	ft	1140	$7.30	$6,840.00	$1,482.00	$8,322.00	0.080	$1.30	$6.00	91.2
Legrand	V5748	1G Device Box - Ivory	ea	114	$33.50	$2,565.00	$1,254.00	$3,819.00	0.300	$11.00	$22.50	34.2
		Electric Metallic Tubing, 3/4"	ft	600	$5.75	$2,790.00	$660.00	$3,450.00	0.062	$1.10	$4.65	37.2
		Wire, 600Volt, type THWN, copper, solid #12	ft	1800	$0.13	$0.00	$234.00	$234.00	0.000	$0.13	$0.00	0
		Pull Branch circuit homeruns	ea	4	$93.75	$375.00	$0.00	$375.00	1.250	$0.00	$93.75	5
		1G Device Box - Ivory	ea	4	$39.00	$90.00	$66.00	$156.00	0.300	$16.50	$22.50	1.2
		Receptacle, duplex, 120V, 20Amp	ea	4	$24.70	$90.00	$8.80	$98.80	0.300	$2.20	$22.50	1.2
		SG Face plate, 1-port, ivory	ea	4	$8.60	$30.00	$4.40	$34.40	0.100	$1.10	$7.50	0.4
		Plywood	ls	4	$185.00	$300.00	$440.00	$740.00	1.000	$110.00	$75.00	4
		Terminate 4-pair	ea	570	$6.23	$3,551.10	$0.00	$3,551.10	0.083	$0.00	$6.23	47.31
		Pull Cables, multiples of	1	64	$112.50	$7,200.00	$0.00	$7,200.00	1.500	$0.00	$112.50	96
		Pull Cables, multiples of	2	0	$123.75	$0.00	$0.00	$0.00	1.650	$0.00	$123.75	0
		Pull Cables, multiples of	3	0	$116.25	$0.00	$0.00	$0.00	1.550	$0.00	$116.25	0
		Pull Cables, multiples of	5	50	$131.25	$6,562.50	$0.00	$6,562.50	1.750	$0.00	$131.25	87.5
		Pull Cables, multiples of	6	27	$225.00	$6,075.00	$0.00	$6,075.00	3.000	$0.00	$225.00	81
		Dress cables in closet spaces	ea	4	$450.00	$1,800.00	$0.00	$1,800.00	6.000	$0.00	$450.00	24
		Misc. term closet hardware	ea	4	$355.00	$1,200.00	$220.00	$1,420.00	4.000	$55.00	$300.00	16
		Labeling	ea	285	$4.61	$1,282.50	$31.35	$1,313.85	0.060	$0.11	$4.50	17.1
		Firestopping	ea	120	$22.25	$1,350.00	$1,320.00	$2,670.00	0.150	$11.00	$11.25	18
		Fiber optic testing	ea	36	$7.50	$270.00	$0.00	$270.00	0.100	$0.00	$7.50	3.6
		Category 5 testing	ea	285	$6.00	$1,710.00	$0.00	$1,710.00	0.080	$0.00	$6.00	22.8
		As-built drawings	ls	1	$600.00	$600.00	$0.00	$600.00	8.000	$0.00	$600.00	8
		Certification	ls	1	$600.00	$600.00	$0.00	$600.00	8.000	$0.00	$600.00	8
		Miscellaneous, cut/patch	ls	1	$3,550.00	$3,000.00	$550.00	$3,550.00	40.000	$550.00	$3,000.00	40
		core drills/sleeves	ea	6	$97.00	$450.00	$132.00	$582.00	1.000	$22.00	$75.00	6
		Replace damaged ceiling tiles	sf	2500	$2.30	$3,000.00	$2,750.00	$5,750.00	0.016	$1.10	$1.20	40
		Performance Bond	ls	1	$3,375.00	$75.00	$3,300.00	$3,375.00	1.000	$3,300.00	$75.00	1
		TOTAL				$101,740.35	$111,563.75	$213,304.10				1,356.44

Thomas Jefferson High School -Replace Network Electronics - Phase 1

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

Product	Description	Quantity	Discount	Price	Ext Price
	Thomas Jefferson High School - Main Closet				
WS-C3750X-24T-S	Catalyst 3750X 24 Port Data IP Base	2	38%	$6,500	$8,060
S375XVK9T-12258SE	CAT 3750X IOS UNIVERSAL WITH WEB BASE DEV MGR	2	38%	$0	$0
C3KX-NM-10G	Catalyst 3K-X 10G Network Module option PID	2	38%	$2,500	$3,100
SFP-10G-SR=	10GBASE-SR SFP Module	3	38%	$1,495	$2,781
CAB-STACK-50CM	Cisco StackWise 50CM Stacking Cable	2	38%	$0	$0
CAB-SPWR-30CM	Catalyst 3750X Stack Power Cable 30 CM	2	38%	$0	$0
CAB-3KX-AC	AC Power Cord for Catalyst 3K-X (North America)	2	38%	$0	$0
C3KX-PWR-350WAC	Catalyst 3K-X 350W AC Power Supply	2	38%	$0	$0
CON-SNT-3750X2TS	SMARTNET 8X5XNBD Catalyst 3750X 24 Port Data IP Base	2	10%	$700	$1,260
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Thomas Jefferson High School - Closet A (220 ports)				
WS-C2960S-48TD-L	Catalyst 2960S 48 GigE, 2 x 10G SFP+ LAN Base	5	38%	$6,995	$21,685
SFP-10G-SR=	10GBASE-SR SFP Module	1	38%	$1,495	$927
CAB-16AWG-AC	AC Power cord, 16AWG	5	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	5	38%	$1,500	$4,650
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	5	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	5	38%	$0	$0
CON-SNT-2960S4TD	SMARTNET 8X5XNBD Cat2960S Stk48 GigE,2x10G SFP+ LAN Base	5	10%	$325	$1,463
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Thomas Jefferson High School - Closet B (111 ports)				
WS-C2960S-48TD-L	Catalyst 2960S 48 GigE, 2 x 10G SFP+ LAN Base	3	38%	$6,995	$13,011
SFP-10G-SR=	10GBASE-SR SFP Module	1	38%	$1,495	$927
CAB-16AWG-AC	AC Power cord, 16AWG	3	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	3	38%	$1,500	$2,790
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	3	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	3	38%	$0	$0
CON-SNT-2960S4TD	SMARTNET 8X5XNBD Cat2960S Stk48 GigE,2x10G SFP+ LAN Base	3	10%	$325	$878
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Thomas Jefferson High School - Closet C (125 ports)				
WS-C2960S-48TD-L	Catalyst 2960S 48 GigE, 2 x 10G SFP+ LAN Base	3	38%	$6,995	$13,011
SFP-10G-SR=	10GBASE-SR SFP Module	1	38%	$1,495	$927
CAB-16AWG-AC	AC Power cord, 16AWG	3	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	3	38%	$1,500	$2,790
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	3	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	3	38%	$0	$0
CON-SNT-2960S4TD	SMARTNET 8X5XNBD Cat2960S Stk48 GigE,2x10G SFP+ LAN Base	3	10%	$325	$878
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Sub-Total Thomas Jefferson High School:				**$84,535**
	Labor: Design, Installation and acceptance testing:				**$16,907**
	Sub-Total Thomas Jefferson High School:				**$101,442**

Thomas Jefferson High School -Phase 1

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

27-Feb-12

THOMAS JEFFERSON HIGH SCHOOL
HVAC - Cooling for Telecom Closets

LABOR HR
$75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Cooling for Telecom Closets												
		1.5 Ton wall mounted DX split systm	ea	4	$3,450.00	$7,200.00	$6,600.00	$13,800.00	24.000	$1,650.00	$1,800.00	96
		Condensate piping	ls	4	$520.00	$1,200.00	$880.00	$2,080.00	4.000	$220.00	$300.00	16
		Power Wiring	ls	4	$697.50	$1,800.00	$990.00	$2,790.00	6.000	$247.50	$450.00	24
		TOTAL				$10,200.00	$8,470.00	$18,670.00				136.00

Thomas Jefferson High School -Phase 1

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

27-Feb-12

THOMAS JEFFERSON HIGH SCHOOL
ADD (4) RECEPTACLES PER CLASSROOM

LABOR HR $75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Add (4) Receptacles per Classroom												
		Electric Metallic Tubing, 3/4"	ft	500	$5.75	$2,325.00	$550.00	$2,875.00	0.062	$1.10	$4.65	31
		600V, copper, MC cable, #12, 3-wire	ft	7500	$4.02	$20,250.00	$9,900.00	$30,150.00	0.036	$1.32	$2.70	270
		Wire, 600Volt, type THWN, copper, solid #12	ft	3750	$0.13	$0.00	$487.50	$487.50	0.000	$0.13	$0.00	0
		Pull Branch circuit homeruns	ea	50	$93.75	$4,687.50	$0.00	$4,687.50	1.250	$0.00	$93.75	62.5
		1G Device Box - Ivory	ea	200	$39.00	$4,500.00	$3,300.00	$7,800.00	0.300	$16.50	$22.50	60
		Receptacle, duplex, 120V, 20Amp	ea	200	$24.70	$4,500.00	$440.00	$4,940.00	0.300	$2.20	$22.50	60
		SG Face plate, 1-port, ivory	ea	50	$8.60	$375.00	$55.00	$430.00	0.100	$1.10	$7.50	5
		Panelboard	ea	3	$2,300.00	$3,600.00	$3,300.00	$6,900.00	16.000	$1,100.00	$1,200.00	48
		Labeling	ea	50	$4.61	$225.00	$5.50	$230.50	0.060	$0.11	$4.50	3
		As-built drawings	ls	1	$300.00	$300.00	$0.00	$300.00	4.000	$0.00	$300.00	4
		Miscellaneous	ls	1	$2,350.00	$1,800.00	$550.00	$2,350.00	24.000	$550.00	$1,800.00	24
		core drills/sleeves	ea	6	$97.00	$450.00	$132.00	$582.00	1.000	$22.00	$75.00	6
		Testing	ea	50	$6.23	$311.50	$0.00	$311.50	0.083	$0.00	$6.23	4.15
		Performance Bond	ls	1	$1,175.00	$75.00	$1,100.00	$1,175.00	1.000	$1,100.00	$75.00	1
		TOTAL				$43,399.00	$19,820.00	$63,219.00				578.65

Jefferson Elementary School -Phase 1

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

27-Feb-12

JEFFERSON ELEMENTARY SCHOOL
STRUCTURED CABLING SYSTEM

LABOR HR $75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Structured Cabling												
		Mobilization	ls	1	$3,000.00	$3,000.00	$0.00	$3,000.00	40.000	$0.00	$3,000.00	40
Superior Essex	61110-R*6	Category 6+ UTP Cable, CMP	ft	61400	$0.49	$0.00	$30,086.00	$30,086.00	0.000	$0.49	$0.00	0
Superior Essex	4412AYG01	12-strand, 50micron, Fiber Optic Cable, CMP	ft	200	$1.88	$120.00	$256.00	$376.00	0.008	$1.28	$0.60	1.6
		1" Plenum Innerduct,corrogated	ft	200	$4.40	$450.00	$430.00	$880.00	0.030	$2.15	$2.25	6
Leviton	42080-1IS	SG Faceplate, 1-port, ivory	ea	200	$9.63	$1,500.00	$426.00	$1,926.00	0.100	$2.13	$7.50	20
Leviton		SG Faceplate, 6-port, ivory	ea	18	$9.63	$135.00	$38.34	$173.34	0.100	$2.13	$7.50	1.8
Leviton	41087-2IP	Duplex mounting strap	ea	0	$5.79	$0.00	$0.00	$0.00	0.050	$2.04	$3.75	0
Leviton	61110-RA6	1-RJ45 Jack, 568B, Cat 6+	ea	307	$10.68	$0.00	$3,278.76	$3,278.76	0.000	$10.68	$0.00	0
Leviton	69586-U24	Patch Panel, Cat 6+, 24-port	ea	0	$302.40	$0.00	$0.00	$0.00	0.250	$283.65	$18.75	0
Leviton	69586-U48	Patch Panel, Cat 6+, 48-port, 568B	ea	7	$577.53	$131.25	$3,911.46	$4,042.71	0.250	$558.78	$18.75	1.75
Leviton	49252-PCM	Combo Front and Rear Cable Manager, 2RU	ea	11	$117.75	$206.25	$1,089.00	$1,295.25	0.250	$99.00	$18.75	2.75
Leviton	5R1UH-S03	Opt-X Ultra 1RU Fiber Enclosure	ea	2	$505.25	$150.00	$860.50	$1,010.50	1.000	$430.25	$75.00	2
Leviton	5R2UH-S06	Opt-X Ultra 2RU Fiber Enclosure	ea	0	$644.10	$0.00	$0.00	$0.00	1.000	$569.10	$75.00	0
Leviton	5R4UH-S12	Opt-X Ultra 4RU Fiber Enclosure	ea	0	$911.21	$0.00	$0.00	$0.00	1.500	$798.71	$112.50	0
Leviton	5F100-3BC	3-Pack Duplex SC MM (6-fiber) Plate	ea	4	$53.68	$6.00	$208.72	$214.72	0.020	$52.18	$1.50	0.08
Leviton	5F100-6AC	6-Pack Duplex SC MM (12-fiber) Plate	ea	0	$99.88	$0.00	$0.00	$0.00	0.020	$98.38	$1.50	0
Leviton	5F100-BPP	Blank insert panel	ea	2	$7.61	$1.50	$13.72	$15.22	0.010	$6.86	$0.75	0.02
Leviton	49991-LSC	FastCAM SC 50/125 MM Connector	ea	24	$41.99	$450.00	$557.76	$1,007.76	0.250	$23.24	$18.75	6
Leviton	5LDSC-M03	SC-SC Laser Optimized MM Patch, 3 meters	ea	6	$22.59	$13.50	$122.04	$135.54	0.030	$20.34	$2.25	0.18
Leviton	5LDSC-M05	SC-SC Laser Optimized MM Patch, 5 meters	ea	6	$25.60	$13.50	$140.10	$153.60	0.030	$23.35	$2.25	0.18
Leviton	6D460-03	Cat 6 Slimline UTP Patch Cable, 3 ft.	ea	205	$13.75	$539.15	$2,279.60	$2,818.75	0.035	$11.12	$2.63	7.175
Leviton	6D460-05	Cat 6 Slimline UTP Patch Cable, 5 ft.	ea	205	$15.02	$539.15	$2,539.95	$3,079.10	0.035	$12.39	$2.63	7.175
Leviton	6D460-07	Cat 6 Slimline UTP Patch Cable, 7 ft.	ea	205	$16.25	$539.15	$2,792.10	$3,331.25	0.035	$13.62	$2.63	7.175
Chatsworth		19" Equipment rack	ea	2	$493.60	$600.00	$387.20	$987.20	4.000	$193.60	$300.00	8
Chatsworth		Wall mounted equipment rack, 48"	ea	0	$868.00	$0.00	$0.00	$0.00	6.000	$418.00	$450.00	0
Leviton	8980L-VFO	Vertical 80" Channel	ea	4	$860.30	$1,800.00	$1,641.20	$3,441.20	6.000	$410.30	$450.00	24
Leviton	P1071-10S	Surge protected Vertical PDU	ea	2	$616.10	$900.00	$332.20	$1,232.20	6.000	$166.10	$450.00	12
Erico Prod	CAT12	Category 5 j-hooks	ea	60	$9.15	$450.00	$99.00	$549.00	0.100	$1.65	$7.50	6
Erico Prod	CAT21	Category 5 j-hooks	ea	0	$16.93	$0.00	$0.00	$0.00	0.200	$1.93	$15.00	0
Erico Prod	CAT32	Category 5 j-hooks	ea	0	$17.48	$0.00	$0.00	$0.00	0.200	$2.48	$15.00	0
Cisco	AIR-PWRINJ4=	Power Injector for Wireless Access Points	ea	6	$201.40	$225.00	$983.40	$1,208.40	0.500	$163.90	$37.50	3
Legrand	V500	One-piece Steel Raceway, Ivory	ft	400	$7.30	$2,400.00	$520.00	$2,920.00	0.080	$1.30	$6.00	32
Legrand	V5748	1G Device Box - Ivory	ea	40	$33.50	$900.00	$440.00	$1,340.00	0.300	$11.00	$22.50	12
Legrand	V2400BD	Divided Steel Raceway, 2400 Base, Ivory	ft	1020	$13.11	$11,475.00	$1,897.20	$13,372.20	0.150	$1.86	$11.25	153
Legrand	V2400C	Steel Racway Cover	ft	1020	$4.97	$3,825.00	$1,244.40	$5,069.40	0.050	$1.22	$3.75	51
Legrand	V2411DFO	Divided Stl Flat FiberReady Elbow	ea	34	$32.29	$510.00	$587.86	$1,097.86	0.200	$17.29	$15.00	6.8
Legrand	2444D	1G Device Box - Ivory	ea	136	$39.00	$3,060.00	$2,244.00	$5,304.00	0.300	$16.50	$22.50	40.8
Legrand	V2410BD	Stl Divided End Blank 2400 Ivory	ea	34	$8.46	$255.00	$32.64	$287.64	0.100	$0.96	$7.50	3.4
Cablofil	CF105/200EZ	Cable basket tray, 4"D x 8"W, Electro-plated	ft	510	$23.72	$6,502.50	$5,594.70	$12,097.20	0.170	$10.97	$12.75	86.7
		Hangers	ls	1	$2,680.00	$1,800.00	$880.00	$2,680.00	24.000	$880.00	$1,800.00	24
		Electric Metallic Tubing, 3/4'	ft	300	$5.75	$1,395.00	$330.00	$1,725.00	0.062	$1.10	$4.65	18.6
		Wire, 600Volt, type THWN, copper, solid #12	ft	900	$0.13	$0.00	$117.00	$117.00	0.000	$0.13	$0.00	0
		Pull Branch circuit homeruns	ea	2	$93.75	$187.50	$0.00	$187.50	1.250	$0.00	$93.75	2.5
		1G Device Box - Ivory	ea	2	$39.00	$45.00	$33.00	$78.00	0.300	$16.50	$22.50	0.6
		Receptacle, duplex, 120V, 20Amp	ea	2	$24.70	$45.00	$4.40	$49.40	0.300	$2.20	$22.50	0.6
		SG Face plate, 1-port, ivory	ea	2	$8.60	$15.00	$2.20	$17.20	0.100	$1.10	$7.50	0.2
		Plywood	ls	0	$185.00	$0.00	$0.00	$0.00	1.000	$110.00	$75.00	0
		Terminate 4-pair	ea	614	$6.23	$3,825.22	$0.00	$3,825.22	0.083	$0.00	$6.23	50.962
		Pull Cables, multiples of	1	17	$112.50	$1,912.50	$0.00	$1,912.50	1.500	$0.00	$112.50	25.5
		Pull Cables, multiples of	2	0	$123.75	$0.00	$0.00	$0.00	1.650	$0.00	$123.75	0
		Pull Cables, multiples of	3	0	$116.25	$0.00	$0.00	$0.00	1.550	$0.00	$116.25	0
		Pull Cables, multiples of	5	57	$225.00	$12,825.00	$0.00	$12,825.00	3.000	$0.00	$225.00	171
		Dress cables in closet spaces	ea	2	$450.00	$900.00	$0.00	$900.00	6.000	$0.00	$450.00	12
		Misc. term closet hardware	ea	2	$355.00	$600.00	$110.00	$710.00	4.000	$55.00	$300.00	8
		Labeling	ea	307	$4.61	$1,381.50	$33.77	$1,415.27	0.060	$0.11	$4.50	18.42
		Firestopping	ea	40	$22.25	$450.00	$440.00	$890.00	0.150	$11.00	$11.25	6
		Fiber optic testing	ea	12	$7.50	$90.00	$0.00	$90.00	0.100	$0.00	$7.50	1.2
		Category 5 testing	ea	307	$6.00	$1,842.00	$0.00	$1,842.00	0.080	$0.00	$6.00	24.56
		As-built drawings	ls	1	$600.00	$600.00	$0.00	$600.00	8.000	$0.00	$600.00	8
		Certification	ls	1	$600.00	$600.00	$0.00	$600.00	8.000	$0.00	$600.00	8
		Miscellaneous	ls	1	$3,550.00	$3,000.00	$550.00	$3,550.00	40.000	$550.00	$3,000.00	40
		core drills/sleeves	ea	2	$97.00	$150.00	$44.00	$194.00	1.000	$22.00	$75.00	2
		Remove/replace ceiling tile	ea	1	$2,400.00	$2,400.00	$0.00	$2,400.00	32.000	$0.00	$2,400.00	32
		Replace damaged ceiling tiles	sf	600	$2.60	$900.00	$660.00	$1,560.00	0.020	$1.10	$1.50	12
		Performance Bond	ls	1	$2,275.00	$75.00	$2,200.00	$2,275.00	1.000	$2,200.00	$75.00	1
		TOTAL				$75,735.67	$70,438.22	$146,173.89				1,009.73

Jefferson Elementary School -Replace Network Electronics - Phase 1					
	LOFTUS ENGINEERS ***555 NORTH BELL AVENUE*** ***CARNEGIE, PA 15222*** ***Telephone (412) 489-9127***				
Product	**Description**	**Quantity**	**Discount**	**Price**	**Ext Price**
	Jefferson Elementary School - Main Closet (159 ports)				
WS-C3750X-48T-S	Catalyst 3750X 48 Port Data IP Base	3	38%	$11,500	$21,390
S375XVK9T-12258SE	CAT 3750X IOS UNIVERSAL WITH WEB BASE DEV MGR	3	38%	$0	$0
C3KX-NM-10G	Catalyst 3K-X 10G Network Module option PID	3	38%	$2,500	$4,650
SFP-10G-SR=	10GBASE-SR SFP Module	1	38%	$1,495	$927
CAB-STACK-50CM	Cisco StackWise 50CM Stacking Cable	3	38%	$0	$0
CAB-SPWR-30CM	Catalyst 3750X Stack Power Cable 30 CM	3	38%	$0	$0
CAB-3KX-AC	AC Power Cord for Catalyst 3K-X (North America)	3	38%	$0	$0
C3KX-PWR-350WAC	Catalyst 3K-X 350W AC Power Supply	3	38%	$0	$0
CON-SNT-3750X4TS	SMARTNET 8X5XNBD Catalyst 3750X 48 Port Data IP Base	3	10%	$700	$1,890
WS-C3750X-24T-S	Catalyst 3750X 24 Port Data IP Base	1	38%	$6,500	$4,030
S375XVK9T-12258SE	CAT 3750X IOS UNIVERSAL WITH WEB BASE DEV MGR	1	38%	$0	$0
C3KX-NM-10G	Catalyst 3K-X 10G Network Module option PID	1	38%	$2,500	$1,550
CAB-STACK-50CM	Cisco StackWise 50CM Stacking Cable	1	38%	$0	$0
CAB-SPWR-30CM	Catalyst 3750X Stack Power Cable 30 CM	1	38%	$0	$0
CAB-3KX-AC	AC Power Cord for Catalyst 3K-X (North America)	1	38%	$0	$0
C3KX-PWR-350WAC	Catalyst 3K-X 350W AC Power Supply	1	38%	$0	$0
CON-SNT-3750X2TS	SMARTNET 8X5XNBD Catalyst 3750X 24 Port Data IP Base	1	10%	$700	$630
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Jefferson Elementary School - Closet A (192 ports)				
WS-C2960S-48TD-L	Catalyst 2960S 48 GigE, 2 x 10G SFP+ LAN Base	4	38%	$6,995	$17,348
SFP-10G-SR=	10GBASE-SR SFP Module	1	38%	$1,495	$927
CAB-16AWG-AC	AC Power cord, 16AWG	4	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	4	38%	$1,500	$3,720
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	4	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	4	38%	$0	$0
CON-SNT-2960S4TD	SMARTNET 8X5XNBD Cat2960S Stk48 GigE,2x10G SFP+ LAN Base	4	10%	$325	$1,170
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Sub-total Jefferson Elementary School:				**$60,931**
	Labor: Design, Installation and acceptance testing:				**$12,186**
	Total Jefferson Elementary School:				**$73,118**

Jefferson Elementary School -Phase 1

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

27-Feb-12

JEFFERSON ELEMENTARY SCHOOL
HVAC - Cooling for Telecom Closets

LABOR HR
$75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Cooling for Telecom Closets												
		1.5 Ton wall mounted DX split systm	ea	4	$3,450.00	$7,200.00	$6,600.00	$13,800.00	24.000	$1,650.00	$1,800.00	96
		Condensate piping	ls	4	$520.00	$1,200.00	$880.00	$2,080.00	4.000	$220.00	$300.00	16
		Power Wiring	ls	4	$697.50	$1,800.00	$990.00	$2,790.00	6.000	$247.50	$450.00	24
		5.0 Ton Condensing Unit, fan-coil and refr. Pip	ea	4	$5,100.00	$7,200.00	$13,200.00	$20,400.00	24.000	$3,300.00	$1,800.00	96
		Condensate piping	ls	4	$520.00	$1,200.00	$880.00	$2,080.00	4.000	$220.00	$300.00	16
		Power Wiring	ls	4	$985.00	$2,400.00	$1,540.00	$3,940.00	8.000	$385.00	$600.00	32
		Control Wiring	ls	4	$280.00	$900.00	$220.00	$1,120.00	3.000	$55.00	$225.00	12
		TOTAL				$21,900.00	$24,310.00	$46,210.00				292.00

Jefferson Elementary School -Phase 1

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

27-Feb-12

JEFFERSON ELEMENTARY SCHOOL
ADD (4) RECEPTACLES PER CLASSROOM

LABOR HR
$75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Add (4) Receptacles per Classroom												
		Electric Metallic Tubing, 3/4"	ft	340	$5.75	$1,581.00	$374.00	$1,955.00	0.062	$1.10	$4.65	21.08
		600V, copper, MC cable, #12, 3-wire	ft	5100	$4.02	$13,770.00	$6,732.00	$20,502.00	0.036	$1.32	$2.70	183.6
		Wire, 600Volt, type THWN, copper, solid #1	ft	2550	$0.13	$0.00	$331.50	$331.50	0.000	$0.13	$0.00	0
		Pull Branch circuit homeruns	ea	34	$93.75	$3,187.50	$0.00	$3,187.50	1.250	$0.00	$93.75	42.5
		1G Device Box - Ivory	ea	136	$39.00	$3,060.00	$2,244.00	$5,304.00	0.300	$16.50	$22.50	40.8
		Receptacle, duplex, 120V, 20Amp	ea	136	$24.70	$3,060.00	$299.20	$3,359.20	0.300	$2.20	$22.50	40.8
		SG Face plate, 1-port, ivory	ea	34	$8.60	$255.00	$37.40	$292.40	0.100	$1.10	$7.50	3.4
		Panelboard	ea	2	$2,300.00	$2,400.00	$2,200.00	$4,600.00	16.000	$1,100.00	$1,200.00	32
		Labeling	ea	34	$4.61	$153.00	$3.74	$156.74	0.060	$0.11	$4.50	2.04
		As-built drawings	ls	1	$300.00	$300.00	$0.00	$300.00	4.000	$0.00	$300.00	4
		Miscellaneous	ls	1	$2,350.00	$1,800.00	$550.00	$2,350.00	24.000	$550.00	$1,800.00	24
		core drills/sleeves	ea	6	$97.00	$450.00	$132.00	$582.00	1.000	$22.00	$75.00	6
		Testing	ea	34	$6.23	$211.82	$0.00	$211.82	0.083	$0.00	$6.23	2.822
		Performance Bond	ls	1	$1,010.00	$75.00	$935.00	$1,010.00	1.000	$935.00	$75.00	1
		TOTAL				$30,303.32	$13,838.84	$44,142.16				404.04

Administration Building -Phase 1

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

27-Feb-12

ADMINISTRATION BLDG
STRUCTURED CABLING SYSTEM

LABOR HR
$75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Structured Cabling												
		Mobilization	ls	1	$1,800.00	$1,800.00	$0.00	$1,800.00	24.000	$0.00	$1,800.00	24
Superior Essex	61110-R*6	Category 6+ UTP Cable, CMP	ft	9620	$0.49	$0.00	$4,713.80	$4,713.80	0.000	$0.49	$0.00	0
Superior Essex	4412AYG01	12-strand, 50micron, Fiber Optic Cable, CMP	ft	200	$1.88	$120.00	$256.00	$376.00	0.008	$1.28	$0.60	1.6
		1" Plenum Innerduct,corrogated	ft	200	$4.40	$450.00	$430.00	$880.00	0.030	$2.15	$2.25	6
Leviton	42080-2IS	SG Faceplate, 2-port, ivory	ea	26	$9.63	$195.00	$55.38	$250.38	0.100	$2.13	$7.50	2.6
Leviton		SG Faceplate, 6-port, ivory	ea	0	$9.63	$0.00	$0.00	$0.00	0.100	$2.13	$7.50	0
Leviton	41087-2IP	Duplex mounting strap	ea	0	$5.79	$0.00	$0.00	$0.00	0.050	$2.04	$3.75	0
Leviton	61110-RA6	1-RJ45 Jack, 568B, Cat 6+	ea	52	$10.68	$0.00	$555.36	$555.36	0.000	$10.68	$0.00	0
Leviton	69586-U24	Patch Panel, Cat 6+, 24-port	ea	1	$302.40	$18.75	$283.65	$302.40	0.250	$283.65	$18.75	0.25
Leviton	69586-U48	Patch Panel, Cat 6+, 48-port, 568B	ea	1	$577.53	$18.75	$558.78	$577.53	0.250	$558.78	$18.75	0.25
Leviton	49252-PCM	Combo Front and Rear Cable Manager, 2RU	ea	4	$117.75	$75.00	$396.00	$471.00	0.250	$99.00	$18.75	1
Leviton	5R1UH-S03	Opt-X Ultra 1RU Fiber Enclosure	ea	2	$505.25	$150.00	$860.50	$1,010.50	1.000	$430.25	$75.00	2
Leviton	5R2UH-S06	Opt-X Ultra 2RU Fiber Enclosure	ea	0	$644.10	$0.00	$0.00	$0.00	1.000	$569.10	$75.00	0
Leviton	5R4UH-S12	Opt-X Ultra 4RU Fiber Enclosure	ea	0	$911.21	$0.00	$0.00	$0.00	1.500	$798.71	$112.50	0
Leviton	5F100-3BC	3-Pack Duplex SC MM (6-fiber) Plate	ea	4	$53.68	$6.00	$208.72	$214.72	0.020	$52.18	$1.50	0.08
Leviton	5F100-6AC	6-Pack Duplex SC MM (12-fiber) Plate	ea	0	$99.88	$0.00	$0.00	$0.00	0.020	$98.38	$1.50	0
Leviton	5F100-BPP	Blank insert panel	ea	2	$7.61	$1.50	$13.72	$15.22	0.010	$6.86	$0.75	0.02
Leviton	49991-LSC	FastCAM SC 50/125 MM Connector	ea	24	$41.99	$450.00	$557.76	$1,007.76	0.250	$23.24	$18.75	6
Leviton	5LDSC-M03	SC-SC Laser Optimized MM Patch, 3 meters	ea	4	$22.59	$9.00	$81.36	$90.36	0.030	$20.34	$2.25	0.12
Leviton	5LDSC-M05	SC-SC Laser Optimized MM Patch, 5 meters	ea	0	$25.60	$0.00	$0.00	$0.00	0.030	$23.35	$2.25	0
Leviton	6D460-03	Cat 6 Slimline UTP Patch Cable, 3 ft.	ea	35	$13.75	$92.05	$389.20	$481.25	0.035	$11.12	$2.63	1.225
Leviton	6D460-05	Cat 6 Slimline UTP Patch Cable, 5 ft.	ea	35	$15.02	$92.05	$433.65	$525.70	0.035	$12.39	$2.63	1.225
Leviton	6D460-07	Cat 6 Slimline UTP Patch Cable, 7 ft.	ea	35	$16.25	$92.05	$476.70	$568.75	0.035	$13.62	$2.63	1.225
Chatsworth		19" Equipment rack	ea	0	$493.60	$0.00	$0.00	$0.00	4.000	$193.60	$300.00	0
Chatsworth		Wall mounted equipment rack, 48"	ea	2	$868.00	$900.00	$836.00	$1,736.00	6.000	$418.00	$450.00	12
Leviton	8980L-VFO	Vertical 80" Channel	ea	0	$860.30	$0.00	$0.00	$0.00	6.000	$410.30	$450.00	0
Leviton	P1071-10S	Surge protected Vertical PDU	ea	2	$616.10	$900.00	$332.20	$1,232.20	6.000	$166.10	$450.00	12
Erico Prod	CAT12	Category 5 j-hooks	ea	40	$9.15	$300.00	$66.00	$366.00	0.100	$1.65	$7.50	4
Erico Prod	CAT21	Category 5 j-hooks	ea	12	$16.93	$180.00	$23.16	$203.16	0.200	$1.93	$15.00	2.4
Erico Prod	CAT32	Category 5 j-hooks	ea	0	$17.48	$0.00	$0.00	$0.00	0.200	$2.48	$15.00	0
Cisco	AIR-PWRINJ4=	Power Injector for Wireless Access Points	ea	3	$201.40	$112.50	$491.70	$604.20	0.500	$163.90	$37.50	1.5
Legrand	V500	One-piece Steel Raceway, Ivory	ft	260	$7.30	$1,560.00	$338.00	$1,898.00	0.080	$1.30	$6.00	20.8
Legrand	V5748	1G Device Box - Ivory	ea	26	$33.50	$585.00	$286.00	$871.00	0.300	$11.00	$22.50	7.8
Legrand	V2400BD	Divided Steel Raceway, 2400 Base, Ivory	ft	0	$13.11	$0.00	$0.00	$0.00	0.150	$1.86	$11.25	0
Legrand	V2400C	Steel Racway Cover	ft	0	$4.97	$0.00	$0.00	$0.00	0.050	$1.22	$3.75	0
Legrand	V2411DFO	Divided Stl Flat FiberReady Elbow	ea	0	$32.29	$0.00	$0.00	$0.00	0.200	$17.29	$15.00	0
Legrand	2444D	1G Device Box - Ivory	ea	0	$39.00	$0.00	$0.00	$0.00	0.300	$16.50	$22.50	0
Legrand	V2410BD	Stl Divided End Blank 2400 Ivory	ea	0	$8.46	$0.00	$0.00	$0.00	0.100	$0.96	$7.50	0
Cablofil	CF105/200EZ	Cable basket tray, 4"D x 8"W, Electro-plated	ft	0	$23.72	$0.00	$0.00	$0.00	0.170	$10.97	$12.75	0
		Hangers	ls	0	$2,680.00	$0.00	$0.00	$0.00	24.000	$880.00	$1,800.00	0
		Electric Metallic Tubing, 3/4"	ft	300	$5.75	$1,395.00	$330.00	$1,725.00	0.062	$1.10	$4.65	18.6
		Wire, 600Volt, type THWN, copper, solid #12	ft	900	$0.13	$0.00	$117.00	$117.00	0.000	$0.13	$0.00	0
		Pull Branch circuit homeruns	ea	2	$93.75	$187.50	$0.00	$187.50	1.250	$0.00	$93.75	2.5
		1G Device Box - Ivory	ea	2	$39.00	$45.00	$33.00	$78.00	0.300	$16.50	$22.50	0.6
		Receptacle, duplex, 120V, 20Amp	ea	2	$24.70	$45.00	$4.40	$49.40	0.300	$2.20	$22.50	0.6
		SG Face plate, 1-port, ivory	ea	2	$8.60	$15.00	$2.20	$17.20	0.100	$1.10	$7.50	0.2
		Plywood	ls	2	$185.00	$150.00	$220.00	$370.00	1.000	$110.00	$75.00	2
		Terminate 4-pair	ea	104	$6.23	$647.92	$0.00	$647.92	0.083	$0.00	$6.23	8.632
		Pull Cables, multiples of	1	0	$112.50	$0.00	$0.00	$0.00	1.500	$0.00	$112.50	0
		Pull Cables, multiples of	2	26	$123.75	$3,217.50	$0.00	$3,217.50	1.650	$0.00	$123.75	42.9
		Pull Cables, multiples of	3	0	$116.25	$0.00	$0.00	$0.00	1.550	$0.00	$116.25	0
		Pull Cables, multiples of	5	0	$225.00	$0.00	$0.00	$0.00	3.000	$0.00	$225.00	0
		Dress cables in closet spaces	ea	2	$450.00	$900.00	$0.00	$900.00	6.000	$0.00	$450.00	12
		Misc. term closet hardware	ea	2	$355.00	$600.00	$110.00	$710.00	4.000	$55.00	$300.00	8
		Labeling	ea	52	$4.61	$234.00	$5.72	$239.72	0.060	$0.11	$4.50	3.12
		Firestopping	ea	12	$22.25	$135.00	$132.00	$267.00	0.150	$11.00	$11.25	1.8
		Fiber optic testing	ea	12	$7.50	$90.00	$0.00	$90.00	0.100	$0.00	$7.50	1.2
		Category 5 testing	ea	52	$6.00	$312.00	$0.00	$312.00	0.080	$0.00	$6.00	4.16
		As-built drawings	ls	1	$600.00	$600.00	$0.00	$600.00	8.000	$0.00	$600.00	8
		Certification	ls	1	$600.00	$600.00	$0.00	$600.00	8.000	$0.00	$600.00	8
		Miscellaneous	ls	1	$2,350.00	$1,800.00	$550.00	$2,350.00	24.000	$550.00	$1,800.00	24
		core drills/sleeves	ea	2	$97.00	$150.00	$44.00	$194.00	1.000	$22.00	$75.00	2
		Remove/replace ceiling tile	ls	1	$2,400.00	$2,400.00	$0.00	$2,400.00	32.000	$0.00	$2,400.00	32
		Replace damaged ceiling tiles	sf	250	$2.60	$375.00	$275.00	$650.00	0.020	$1.10	$1.50	5
		Performance Bond	ls	1	$790.00	$75.00	$715.00	$790.00	1.000	$715.00	$75.00	1
		TOTAL				$22,081.57	$15,181.96	$37,263.53				294.41

Administration Building -Replace Network Electronics - Phase 1

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

Product	Description	Quantity	Discount	Price	Ext Price
	Admin Building - Main Closet (18 ports)				
WS-C3750X-24T-S	Catalyst 3750X 24 Port Data IP Base	1	38%	$6,500	$4,030
S375XVK9T-12258SE	CAT 3750X IOS UNIVERSAL WITH WEB BASE DEV MGR	1	38%	$0	$0
C3KX-NM-10G	Catalyst 3K-X 10G Network Module option PID	1	38%	$2,500	$1,550
SFP-10G-SR=	10GBASE-SR SFP Module	1	38%	$1,495	$927
CAB-STACK-50CM	Cisco StackWise 50CM Stacking Cable	1	38%	$0	$0
CAB-SPWR-30CM	Catalyst 3750X Stack Power Cable 30 CM	1	38%	$0	$0
CAB-3KX-AC	AC Power Cord for Catalyst 3K-X (North America)	1	38%	$0	$0
C3KX-PWR-350WAC	Catalyst 3K-X 350W AC Power Supply	1	38%	$0	$0
CON-SNT-3750X2TS	SMARTNET 8X5XNBD Catalyst 3750X 24 Port Data IP Base	1	10%	$700	$630
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Admin Building - Closet A (41 Ports)				
WS-C2960S-48TD-L	Catalyst 2960S 48 GigE, 2 x 10G SFP+ LAN Base	1	38%	$6,995	$4,337
SFP-10G-SR=	10GBASE-SR SFP Module	1	38%	$1,495	$927
CAB-16AWG-AC	AC Power cord, 16AWG	1	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	1	38%	$1,500	$930
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	1	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	1	38%	$0	$0
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Total Admin Building:				**$16,031**
	Labor: Design, Installation and acceptance testing:				**$3,206**
	Total Admin Building:				**$19,237**

Administration Building -Phase 1

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

27-Feb-12

ADMINISTRATION BLDG
HVAC - Cooling for Telecom Closets

LABOR HR
$75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Cooling for Telecom Closets												
		1.5 Ton wall mounted DX split systm	ea	1	$3,450.00	$1,800.00	$1,650.00	$3,450.00	24.000	$1,650.00	$1,800.00	24
		Condensate piping	ls	1	$520.00	$300.00	$220.00	$520.00	4.000	$220.00	$300.00	4
		Power Wiring	ls	1	$697.50	$450.00	$247.50	$697.50	6.000	$247.50	$450.00	6
		TOTAL				$2,550.00	$2,117.50	$4,667.50				34.00

Pleasant Hills Middle School -Phase 2

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

27-Feb-12

PLEASANT HILLS MIDDLE SCHOOL
EXPAND EXISTING DATA INFRASTRUCTURE

LABOR HR
$75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Structured Cabling												
		Mobilization	ls	1	$3,000.00	$3,000.00	$0.00	$3,000.00	40.000	$0.00	$3,000.00	40
Superior Essex	61110-R*6	Category 6+ UTP Cable, CMP	ft	36300	$0.49	$0.00	$17,787.00	$17,787.00	0.000	$0.49	$0.00	0
Superior Essex	4412AYG01	12-strand, 50micron, Fiber Optic Cable, CMP	ft	1000	$1.88	$600.00	$1,280.00	$1,880.00	0.008	$1.28	$0.60	8
		1" Plenum Innerduct,corrogated	ft	1000	$4.40	$2,250.00	$2,150.00	$4,400.00	0.030	$2.15	$2.25	30
Leviton	42080-1IS	SG Faceplate, 1-port, ivory	ea	165	$9.63	$1,237.50	$351.45	$1,588.95	0.100	$2.13	$7.50	16.5
Leviton		SG Faceplate, 6-port, ivory	ea	0	$9.63	$0.00	$0.00	$0.00	0.100	$2.13	$7.50	0
Leviton	41087-2IP	Duplex mounting strap	ea	0	$5.79	$0.00	$0.00	$0.00	0.050	$2.04	$3.75	0
Leviton	61110-RA6	1-RJ45 Jack, 568B, Cat 6+	ea	165	$10.68	$0.00	$1,762.20	$1,762.20	0.000	$10.68	$0.00	0
Leviton	69586-U24	Patch Panel, Cat 6+, 24-port	ea	1	$302.40	$18.75	$283.65	$302.40	0.250	$283.65	$18.75	0.25
Leviton	69586-U48	Patch Panel, Cat 6+, 48-port, 568B	ea	6	$577.53	$112.50	$3,352.68	$3,465.18	0.250	$558.78	$18.75	1.5
Leviton	49252-PCM	Combo Front and Rear Cable Manager, 2RU	ea	15	$117.75	$281.25	$1,485.00	$1,766.25	0.250	$99.00	$18.75	3.75
Leviton	5R1UH-S03	Opt-X Ultra 1RU Fiber Enclosure	ea	4	$505.25	$300.00	$1,721.00	$2,021.00	1.000	$430.25	$75.00	4
Leviton	5R2UH-S06	Opt-X Ultra 2RU Fiber Enclosure	ea	0	$644.10	$0.00	$0.00	$0.00	1.000	$569.10	$75.00	0
Leviton	5R4UH-S12	Opt-X Ultra 4RU Fiber Enclosure	ea	1	$911.21	$112.50	$798.71	$911.21	1.500	$798.71	$112.50	1.5
Leviton	5F100-3BC	3-Pack Duplex SC MM (6-fiber) Plate	ea	20	$53.68	$30.00	$1,043.60	$1,073.60	0.020	$52.18	$1.50	0.4
Leviton	5F100-6AC	6-Pack Duplex SC MM (12-fiber) Plate	ea	0	$99.88	$0.00	$0.00	$0.00	0.020	$98.38	$1.50	0
Leviton	5F100-BPP	Blank insert panel	ea	6	$7.61	$4.50	$41.16	$45.66	0.010	$6.86	$0.75	0.06
Leviton	49991-LSC	FastCAM SC 50/125 MM Connector	ea	120	$41.99	$2,250.00	$2,788.80	$5,038.80	0.250	$23.24	$18.75	30
Leviton	5LDSC-M03	SC-SC Laser Optimized MM Patch, 3 meters	ea	12	$22.59	$27.00	$244.08	$271.08	0.030	$20.34	$2.25	0.36
Leviton	5LDSC-M05	SC-SC Laser Optimized MM Patch, 5 meters	ea	12	$25.60	$27.00	$280.20	$307.20	0.030	$23.35	$2.25	0.36
Leviton	6D460-03	Cat 6 Slimline UTP Patch Cable, 3 ft.	ea	110	$13.75	$289.30	$1,223.20	$1,512.50	0.035	$11.12	$2.63	3.85
Leviton	6D460-05	Cat 6 Slimline UTP Patch Cable, 5 ft.	ea	110	$15.02	$289.30	$1,362.90	$1,652.20	0.035	$12.39	$2.63	3.85
Leviton	6D460-07	Cat 6 Slimline UTP Patch Cable, 7 ft.	ea	110	$16.25	$289.30	$1,498.20	$1,787.50	0.035	$13.62	$2.63	3.85
Chatsworth		19" Equipment rack	ea	0	$493.60	$0.00	$0.00	$0.00	4.000	$193.60	$300.00	0
Chatsworth		Wall mounted equipment rack, 48"	ea	0	$868.00	$0.00	$0.00	$0.00	6.000	$418.00	$450.00	0
Leviton	8980L-VFO	Vertical 80" Channel	ea	6	$860.30	$2,700.00	$2,461.80	$5,161.80	6.000	$410.30	$450.00	36
Leviton	P1071-10S	Surge protected Vertical PDU	ea	5	$616.10	$2,250.00	$830.50	$3,080.50	6.000	$166.10	$450.00	30
Erico Prod	CAT12	Category 5 j-hooks	ea	150	$9.15	$1,125.00	$247.50	$1,372.50	0.100	$1.65	$7.50	15
Erico Prod	CAT21	Category 5 j-hooks	ea	75	$16.93	$1,125.00	$144.75	$1,269.75	0.200	$1.93	$15.00	15
Erico Prod	CAT32	Category 5 j-hooks	ea	25	$17.48	$375.00	$62.00	$437.00	0.200	$2.48	$15.00	5
Cisco	AIR-PWRINJ4=	Power Injector for Wireless Access Points	ea	10	$201.40	$375.00	$1,639.00	$2,014.00	0.500	$163.90	$37.50	5
Legrand	V500	One-piece Steel Raceway, Ivory	ft	0	$7.30	$0.00	$0.00	$0.00	0.080	$1.30	$6.00	0
Legrand	V5748	1G Device Box - Ivory	ea	40	$33.50	$900.00	$440.00	$1,340.00	0.300	$11.00	$22.50	12
Legrand	V2400BD	Divided Steel Raceway, 2400 Base, Ivory	ft	1200	$13.11	$13,500.00	$2,232.00	$15,732.00	0.150	$1.86	$11.25	180
Legrand	V2400C	Steel Racway Cover	ft	1200	$4.97	$4,500.00	$1,464.00	$5,964.00	0.050	$1.22	$3.75	60
Legrand	V2411DFO	Divided Stl Flat FiberReady Elbow	ea	40	$32.29	$600.00	$691.60	$1,291.60	0.200	$17.29	$15.00	8
Legrand	2444D	1G Device Box - Ivory	ea	160	$39.00	$3,600.00	$2,640.00	$6,240.00	0.300	$16.50	$22.50	48
Legrand	V2410BD	Stl Divided End Blank 2400 Ivory	ea	40	$8.46	$300.00	$38.40	$338.40	0.100	$0.96	$7.50	4
Cablofil	CF105/200EZ	Cable basket tray, 4"D x 8"W, Electro-plated	ft	0	$23.72	$0.00	$0.00	$0.00	0.170	$10.97	$12.75	0
		Hangers	ls	0	$2,680.00	$0.00	$0.00	$0.00	24.000	$880.00	$1,800.00	0
		Electric Metallic Tubing, 3/4"	ft	450	$5.75	$2,092.50	$495.00	$2,587.50	0.062	$1.10	$4.65	27.9
		Wire, 600Volt, type THWN, copper, solid #12	ft	1350	$0.13	$0.00	$175.50	$175.50	0.000	$0.13	$0.00	0
		Pull Branch circuit homeruns	ea	3	$93.75	$281.25	$0.00	$281.25	1.250	$0.00	$93.75	3.75
		1G Device Box - Ivory	ea	3	$39.00	$67.50	$49.50	$117.00	0.300	$16.50	$22.50	0.9
		Receptacle, duplex, 120V, 20Amp	ea	3	$24.70	$67.50	$6.60	$74.10	0.300	$2.20	$22.50	0.9
		SG Face plate, 1-port, ivory	ea	3	$8.60	$22.50	$3.30	$25.80	0.100	$1.10	$7.50	0.3
		Plywood	ls	0	$185.00	$0.00	$0.00	$0.00	1.000	$110.00	$75.00	0
		Terminate 4-pair	ea	330	$6.23	$2,055.90	$0.00	$2,055.90	0.083	$0.00	$6.23	27.39
		Pull Cables, multiples of	1	17	$112.50	$1,912.50	$0.00	$1,912.50	1.500	$0.00	$112.50	25.5
		Pull Cables, multiples of	2	0	$123.75	$0.00	$0.00	$0.00	1.650	$0.00	$123.75	0
		Pull Cables, multiples of	3	0	$116.25	$0.00	$0.00	$0.00	1.550	$0.00	$116.25	0
		Pull Cables, multiples of	5	57	$225.00	$12,825.00	$0.00	$12,825.00	3.000	$0.00	$225.00	171
		Dress cables in closet spaces	ea	5	$450.00	$2,250.00	$0.00	$2,250.00	6.000	$0.00	$450.00	30
		Misc. term closet hardware	ea	5	$355.00	$1,500.00	$275.00	$1,775.00	4.000	$55.00	$300.00	20
		Labeling	ea	165	$4.61	$742.50	$18.15	$760.65	0.060	$0.11	$4.50	9.9
		Firestopping	ea	50	$22.25	$562.50	$550.00	$1,112.50	0.150	$11.00	$11.25	7.5
		Fiber optic testing	ea	60	$7.50	$450.00	$0.00	$450.00	0.100	$0.00	$7.50	6
		Category 5 testing	ea	165	$6.00	$990.00	$0.00	$990.00	0.080	$0.00	$6.00	13.2
		As-built drawings	ls	1	$600.00	$600.00	$0.00	$600.00	8.000	$0.00	$600.00	8
		Certification	ls	1	$600.00	$600.00	$0.00	$600.00	8.000	$0.00	$600.00	8
		Miscellaneous	ls	1	$3,550.00	$3,000.00	$550.00	$3,550.00	40.000	$550.00	$3,000.00	40
		core drills/sleeves	ea	2	$97.00	$150.00	$44.00	$194.00	1.000	$22.00	$75.00	2
		Remove/replace ceiling tile	ea	1	$2,400.00	$2,400.00	$0.00	$2,400.00	32.000	$0.00	$2,400.00	32
		Replace damaged ceiling tiles	sf	1000	$2.60	$1,500.00	$1,100.00	$2,600.00	0.020	$1.10	$1.50	20
		Performance Bond	ls	1	$2,275.00	$75.00	$2,200.00	$2,275.00	1.000	$2,200.00	$75.00	1
		TOTAL				$76,613.55	$57,812.43	$134,425.98				1,021.47

Pleasant Hills Middle School -Replace Network Electronics - Phase 2					

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

Product	Description	Quantity	Discount	Price	Ext Price
	Pleasant Hills Middle School - Main Closet (175 ports)				
WS-C3750X-48T-S	Catalyst 3750X 48 Port Data IP Base	4	38%	$11,500	$28,520
S375XVK9T-12258SE	CAT 3750X IOS UNIVERSAL WITH WEB BASE DEV MGR	4	38%	$0	$0
C3KX-NM-10G	Catalyst 3K-X 10G Network Module option PID	4	38%	$2,500	$6,200
SFP-10G-SR=	10GBASE-SR SFP Module	4	38%	$1,495	$3,708
CAB-STACK-50CM	Cisco StackWise 50CM Stacking Cable	4	38%	$0	$0
CAB-SPWR-30CM	Catalyst 3750X Stack Power Cable 30 CM	4	38%	$0	$0
CAB-3KX-AC	AC Power Cord for Catalyst 3K-X (North America)	4	38%	$0	$0
C3KX-PWR-350WAC	Catalyst 3K-X 350W AC Power Supply	4	38%	$0	$0
CON-SNT-3750X4TS	SMARTNET 8X5XNBD Catalyst 3750X 48 Port Data IP Base	4	10%	$700	$2,520
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Pleasant Hills Middle School - Closet A (137 Ports)				
WS-C2960S-48TD-L	Catalyst 2960S 48 GigE, 2 x 10G SFP+ LAN Base	3	38%	$6,995	$13,011
SFP-10G-SR=	10GBASE-SR SFP Module	1	38%	$1,495	$927
CAB-16AWG-AC	AC Power cord, 16AWG	3	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	3	38%	$1,500	$2,790
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	3	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	3	38%	$0	$0
CON-SNT-2960S4TD	SMARTNET 8X5XNBD Cat2960S Stk48 GigE,2x10G SFP+ LAN Base	3	10%	$325	$878
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Pleasant Hills Middle School - Closet B (66 Ports)				
WS-C2960S-48TD-L	Catalyst 2960S 48 GigE, 2 x 10G SFP+ LAN Base	1	38%	$6,995	$4,337
SFP-10G-SR=	10GBASE-SR SFP Module	1	38%	$1,495	$927
CAB-16AWG-AC	AC Power cord, 16AWG	1	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	1	38%	$1,500	$930
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	1	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	1	38%	$0	$0
CON-SNT-2960S4TD	SMARTNET 8X5XNBD Cat2960S Stk48 GigE,2x10G SFP+ LAN Base	1	10%	$325	$293
WS-C2960S-24TD-L	Catalyst 2960S 24 GigE, 2 x 10G SFP+ LAN Base	1	38%	$4,495	$2,787
CAB-16AWG-AC	AC Power cord, 16AWG	1	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	1	38%	$1,500	$930
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	1	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	1	38%	$0	$0
CON-SNT-2960S2TD	SMARTNET 8X5XNBD Cat 2960S Stk 24 GigE,2x10G SFP+LAN Base	1	10%	$325	$293
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Pleasant Hills Middle School - Closet C (101 Ports)				
WS-C2960S-48TD-L	Catalyst 2960S 48 GigE, 2 x 10G SFP+ LAN Base	2	38%	$6,995	$8,674
SFP-10G-SR=	10GBASE-SR SFP Module	1	38%	$1,495	$927
CAB-16AWG-AC	AC Power cord, 16AWG	2	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	2	38%	$1,500	$1,860
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	2	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	2	38%	$0	$0
CON-SNT-2960S4TD	SMARTNET 8X5XNBD Cat2960S Stk48 GigE,2x10G SFP+ LAN Base	2	10%	$325	$585
WS-C2960S-24TD-L	Catalyst 2960S 24 GigE, 2 x 10G SFP+ LAN Base	1	38%	$4,495	$2,787
CAB-16AWG-AC	AC Power cord, 16AWG	1	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	1	38%	$1,500	$930
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	1	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	1	38%	$0	$0
CON-SNT-2960S2TD	SMARTNET 8X5XNBD Cat 2960S Stk 24 GigE,2x10G SFP+LAN Base	1	10%	$325	$293
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Pleasant Hills Middle School - Closet D (56 Ports)				
WS-C2960S-48TD-L	Catalyst 2960S 48 GigE, 2 x 10G SFP+ LAN Base	1	38%	$6,995	$4,337
SFP-10G-SR=	10GBASE-SR SFP Module	1	38%	$1,495	$927
CAB-16AWG-AC	AC Power cord, 16AWG	1	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	1	38%	$1,500	$930
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	1	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	1	38%	$0	$0
CON-SNT-2960S4TD	SMARTNET 8X5XNBD Cat2960S Stk48 GigE,2x10G SFP+ LAN Base	1	10%	$325	$293
WS-C2960S-24TD-L	Catalyst 2960S 24 GigE, 2 x 10G SFP+ LAN Base	1	38%	$4,495	$2,787
CAB-16AWG-AC	AC Power cord, 16AWG	1	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	1	38%	$1,500	$930
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	1	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	1	38%	$0	$0
CON-SNT-2960S2TD	SMARTNET 8X5XNBD Cat 2960S Stk 24 GigE,2x10G SFP+LAN Base	1	10%	$325	$293
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Sub-total Pleasant Hills Middle School:				$102,349
	Labor: Design, Installation and acceptance testing:				$20,470
	Total Pleasant Hills Middle School:				$122,819

Pleasant Hills Middle School -Phase 2

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

27-Feb-12

PLEASANT HILLS MIDDLE SCHOOL
HVAC - Cooling for Telecom Closets

LABOR HR $75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Cooling for Telecom Closets												
		1.5 Ton wall mounted DX split systm	ea	4	$3,450.00	$7,200.00	$6,600.00	$13,800.00	24.000	$1,650.00	$1,800.00	96
		Condensate piping	ls	4	$520.00	$1,200.00	$880.00	$2,080.00	4.000	$220.00	$300.00	16
		Power Wiring	ls	4	$697.50	$1,800.00	$990.00	$2,790.00	6.000	$247.50	$450.00	24
		TOTAL				$10,200.00	$8,470.00	$18,670.00				136.00

Pleasant Hills Middle School -Phase 2

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
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Telephone (412) 489-9127

27-Feb-12

PLEASANT HILLS MIDDLE SCHOOL
ADD (4) RECEPTACLES PER CLASSROOM

LABOR HR
$75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Add (4) Receptacles per Classroom												
		Electric Metallic Tubing, 3/4"	ft	400	$5.75	$1,860.00	$440.00	$2,300.00	0.062	$1.10	$4.65	24.8
		600V, copper, MC cable, #12, 3-wire	ft	6000	$4.02	$16,200.00	$7,920.00	$24,120.00	0.036	$1.32	$2.70	216
		Wire, 600Volt, type THWN, copper, solid #12	ft	3000	$0.13	$0.00	$390.00	$390.00	0.000	$0.13	$0.00	0
		Pull Branch circuit homeruns	ea	40	$93.75	$3,750.00	$0.00	$3,750.00	1.250	$0.00	$93.75	50
		1G Device Box - Ivory	ea	160	$39.00	$3,600.00	$2,640.00	$6,240.00	0.300	$16.50	$22.50	48
		Receptacle, duplex, 120V, 20Amp	ea	160	$24.70	$3,600.00	$352.00	$3,952.00	0.300	$2.20	$22.50	48
		SG Face plate, 1-port, ivory	ea	40	$8.60	$300.00	$44.00	$344.00	0.100	$1.10	$7.50	4
		Panelboard	ea	2	$2,300.00	$2,400.00	$2,200.00	$4,600.00	16.000	$1,100.00	$1,200.00	32
		Labeling	ea	40	$4.61	$180.00	$4.40	$184.40	0.060	$0.11	$4.50	2.4
		As-built drawings	ls	1	$300.00	$300.00	$0.00	$300.00	4.000	$0.00	$300.00	4
		Miscellaneous	ls	1	$2,350.00	$1,800.00	$550.00	$2,350.00	24.000	$550.00	$1,800.00	24
		core drills/sleeves	ea	6	$97.00	$450.00	$132.00	$582.00	1.000	$22.00	$75.00	6
		Testing	ea	40	$6.23	$249.20	$0.00	$249.20	0.083	$0.00	$6.23	3.32
		Performance Bond	ls	1	$1,120.00	$75.00	$1,045.00	$1,120.00	1.000	$1,045.00	$75.00	1
		TOTAL				$34,764.20	$15,717.40	$50,481.60				463.52

Gill Hall Elementary School -Phase 2

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

27-Feb-12

GILL HALL ELEMENTARY SCHOOL
STRUCTURED CABLING SYSTEM

LABOR HR $75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Structured Cabling												
		Mobilization	ls	1	$3,000.00	$3,000.00	$0.00	$3,000.00	40.000	$0.00	$3,000.00	40
Superior Essex	61110-R*6	Category 6+ UTP Cable, CMP	ft	19600	$0.49	$0.00	$9,604.00	$9,604.00	0.000	$0.49	$0.00	0
Superior Essex	4412AYG01	12-strand, 50micron, Fiber Optic Cable, CMP	ft	300	$1.88	$180.00	$384.00	$564.00	0.008	$1.28	$0.60	2.4
		1" Plenum Innerduct,corrogated	ft	300	$4.40	$675.00	$645.00	$1,320.00	0.030	$2.15	$2.25	9
Leviton	42080-1IS	SG Face plate, 1-port, ivory	ea	95	$9.63	$712.50	$202.35	$914.85	0.100	$2.13	$7.50	9.5
Leviton	42080-2IS	SG Face plate, 2-port, ivory	ea	0	$9.63	$0.00	$0.00	$0.00	0.100	$2.13	$7.50	0
Leviton	41087-2IP	Duplex mounting strap	ea	0	$5.79	$0.00	$0.00	$0.00	0.050	$2.04	$3.75	0
Leviton	61110-RA6	1-RJ45 Jack, 568B, Cat 6+	ea	98	$10.68	$0.00	$1,046.64	$1,046.64	0.000	$10.68	$0.00	0
Leviton	69586-U24	Patch Panel, Cat 6+, 24-port	ea	0	$302.40	$0.00	$0.00	$0.00	0.250	$283.65	$18.75	0
Leviton	69586-U48	Patch Panel, Cat 6+, 48-port, 568B	ea	4	$577.53	$75.00	$2,235.12	$2,310.12	0.250	$558.78	$18.75	1
Leviton	49252-PCM	Combo Front and Rear Cable Manager, 2RU	ea	6	$117.75	$112.50	$594.00	$706.50	0.250	$99.00	$18.75	1.5
Leviton	5R1UH-S03	Opt-X Ultra 1RU Fiber Enclosure	ea	2	$505.25	$150.00	$860.50	$1,010.50	1.000	$430.25	$75.00	2
Leviton	5R2UH-S06	Opt-X Ultra 2RU Fiber Enclosure	ea	0	$644.10	$0.00	$0.00	$0.00	1.000	$569.10	$75.00	0
Leviton	5R4UH-S12	Opt-X Ultra 4RU Fiber Enclosure	ea	0	$911.21	$0.00	$0.00	$0.00	1.500	$798.71	$112.50	0
Leviton	5F100-3BC	3-Pack Duplex SC MM (6-fiber) Plate	ea	4	$53.68	$6.00	$208.72	$214.72	0.020	$52.18	$1.50	0.08
Leviton	5F100-6AC	6-Pack Duplex SC MM (12-fiber) Plate	ea	0	$99.88	$0.00	$0.00	$0.00	0.020	$98.38	$1.50	0
Leviton	5F100-BPP	Blank insert panel	ea	4	$7.61	$3.00	$27.44	$30.44	0.010	$6.86	$0.75	0.04
Leviton	49991-LSC	FastCAM SC 50/125 MM Connector	ea	24	$41.99	$450.00	$557.76	$1,007.76	0.250	$23.24	$18.75	6
Leviton	5LDSC-M03	SC-SC Laser Optimized MM Patch, 3 meters	ea	4	$22.59	$9.00	$81.36	$90.36	0.030	$20.34	$2.25	0.12
Leviton	5LDSC-M05	SC-SC Laser Optimized MM Patch, 5 meters	ea	0	$25.60	$0.00	$0.00	$0.00	0.030	$23.35	$2.25	0
Leviton	6D460-03	Cat 6 Slimline UTP Patch Cable, 3 ft.	ea	66	$13.75	$173.58	$733.92	$907.50	0.035	$11.12	$2.63	2.31
Leviton	6D460-05	Cat 6 Slimline UTP Patch Cable, 5 ft.	ea	65	$15.02	$170.95	$805.35	$976.30	0.035	$12.39	$2.63	2.275
Leviton	6D460-07	Cat 6 Slimline UTP Patch Cable, 7 ft.	ea	65	$16.25	$170.95	$885.30	$1,056.25	0.035	$13.62	$2.63	2.275
Chatsworth		19" Equipment rack	ea		$493.60	$0.00	$0.00	$0.00	4.000	$193.60	$300.00	0
Chatsworth		Wall mounted equipment rack, 48"	ea	2	$868.00	$900.00	$836.00	$1,736.00	6.000	$418.00	$450.00	12
Leviton	8980L-VFO	Vertical 80" Channel	ea	0	$860.30	$0.00	$0.00	$0.00	6.000	$410.30	$450.00	0
Leviton	P1071-10S	Surge protected Vertical PDU	ea	2	$616.10	$900.00	$332.20	$1,232.20	6.000	$166.10	$450.00	12
Erico Prod	CAT12	Category 5 j-hooks	ea	30	$9.15	$225.00	$49.50	$274.50	0.100	$1.65	$7.50	3
Erico Prod	CAT21	Category 5 j-hooks	ea	0	$16.93	$0.00	$0.00	$0.00	0.200	$1.93	$15.00	0
Erico Prod	CAT32	Category 5 j-hooks	ea	0	$17.48	$0.00	$0.00	$0.00	0.200	$2.48	$15.00	0
Cisco	AIR-PWRINJ4=	Power Injector for Wireless Access Points	ea	3	$201.40	$112.50	$491.70	$604.20	0.500	$163.90	$37.50	1.5
Legrand	V500	One-piece Steel Raceway, Ivory	ft	400	$7.30	$2,400.00	$520.00	$2,920.00	0.080	$1.30	$6.00	32
Legrand	V5748	1G Device Box - Ivory	ea	40	$33.50	$900.00	$440.00	$1,340.00	0.300	$11.00	$22.50	12
Legrand	V2400BD	Divided Steel Raceway, 2400 Base, Ivory	ft	420	$13.11	$4,725.00	$781.20	$5,506.20	0.150	$1.86	$11.25	63
Legrand	V2400C	Steel Racway Cover	ft	420	$4.97	$1,575.00	$512.40	$2,087.40	0.050	$1.22	$3.75	21
Legrand	V2411DFO	Divided Stl Flat FiberReady Elbow	ea	14	$32.29	$210.00	$242.06	$452.06	0.200	$17.29	$15.00	2.8
Legrand	2444D	1G Device Box - Ivory	ea	56	$39.00	$1,260.00	$924.00	$2,184.00	0.300	$16.50	$22.50	16.8
Legrand	V2410BD	Stl Divided End Blank 2400 Ivory	ea	14	$8.46	$105.00	$13.44	$118.44	0.100	$0.96	$7.50	1.4
		Electric Metallic Tubing, 3/4"	ft	300	$5.75	$1,395.00	$330.00	$1,725.00	0.062	$1.10	$4.65	18.6
		Wire, 600Volt, type THWN, copper, solid #12	ft	900	$0.13	$0.00	$117.00	$117.00	0.000	$0.13	$0.00	0
		Pull Branch circuit homeruns	ea	2	$93.75	$187.50	$0.00	$187.50	1.250	$0.00	$93.75	2.5
		1G Device Box - Ivory	ea	2	$39.00	$45.00	$33.00	$78.00	0.300	$16.50	$22.50	0.6
		Receptacle, duplex, 120V, 20Amp	ea	2	$24.70	$45.00	$4.40	$49.40	0.300	$2.20	$22.50	0.6
		SG Face plate, 1-port, ivory	ea	2	$8.60	$15.00	$2.20	$17.20	0.100	$1.10	$7.50	0.2
		Plywood	ls	2	$185.00	$150.00	$220.00	$370.00	1.000	$110.00	$75.00	2
		Terminate 4-pair	ea	196	$6.23	$1,221.08	$0.00	$1,221.08	0.083	$0.00	$6.23	16.268
		Pull Cables, multiples of	1	26	$112.50	$2,925.00	$0.00	$2,925.00	1.500	$0.00	$112.50	39
		Pull Cables, multiples of	2	0	$123.75	$0.00	$0.00	$0.00	1.650	$0.00	$123.75	0
		Pull Cables, multiples of	3	0	$131.25	$0.00	$0.00	$0.00	1.750	$0.00	$131.25	0
		Pull Cables, multiples of	5	11	$187.50	$2,062.50	$0.00	$2,062.50	2.500	$0.00	$187.50	27.5
		Dress cables in closet spaces	ea	2	$450.00	$900.00	$0.00	$900.00	6.000	$0.00	$450.00	12
		Misc. term closet hardware	ea	2	$355.00	$600.00	$110.00	$710.00	4.000	$55.00	$300.00	8
		Labeling	ea	98	$4.61	$441.00	$10.78	$451.78	0.060	$0.11	$4.50	5.88
		Firestopping	ea	45	$22.25	$506.25	$495.00	$1,001.25	0.150	$11.00	$11.25	6.75
		Fiber optic testing	ea	12	$7.50	$90.00	$0.00	$90.00	0.100	$0.00	$7.50	1.2
		Category 5 testing	ea	98	$6.00	$588.00	$0.00	$588.00	0.080	$0.00	$6.00	7.84
		As-built drawings	ls	1	$600.00	$600.00	$0.00	$600.00	8.000	$0.00	$600.00	8
		Certification/ Warranty	ls	1	$600.00	$600.00	$0.00	$600.00	8.000	$0.00	$600.00	8
		Miscellaneous	ls	1	$3,440.00	$3,000.00	$440.00	$3,440.00	40.000	$440.00	$3,000.00	40
		core drills/sleeves	ea	6	$97.00	$450.00	$132.00	$582.00	1.000	$22.00	$75.00	6
		Replace damaged ceiling tiles	sf	500	$2.60	$750.00	$550.00	$1,300.00	0.020	$1.10	$1.50	10
		Performance Bond	ls	1	$1,395.00	$75.00	$1,320.00	$1,395.00	1.000	$1,320.00	$75.00	1
		TOTAL				$35,847.31	$27,778.34	$63,625.65				477.94

	Gill Hall Elementary School -Replace Network Electronics - Phase 2				
	LOFTUS ENGINEERS *555 NORTH BELL AVENUE* *CARNEGIE, PA 15222* *Telephone (412) 489-9127*				
Product	**Description**	**Quantity**	**Discount**	**Price**	**Ext Price**
	Gill Hall Elementary School - Main Closet (90 ports)				
WS-C3750X-48T-S	Catalyst 3750X 48 Port Data IP Base	2	38%	$11,500	$14,260
S375XVK9T-12258SE	CAT 3750X IOS UNIVERSAL WITH WEB BASE DEV MGR	2	38%	$0	$0
C3KX-NM-10G	Catalyst 3K-X 10G Network Module option PID	2	38%	$2,500	$3,100
SFP-10G-SR=	10GBASE-SR SFP Module	1	38%	$1,495	$927
CAB-STACK-50CM	Cisco StackWise 50CM Stacking Cable	2	38%	$0	$0
CAB-SPWR-30CM	Catalyst 3750X Stack Power Cable 30 CM	2	38%	$0	$0
CAB-3KX-AC	AC Power Cord for Catalyst 3K-X (North America)	2	38%	$0	$0
C3KX-PWR-350WAC	Catalyst 3K-X 350W AC Power Supply	2	38%	$0	$0
CON-SNT-3750X4TS	SMARTNET 8X5XNBD Catalyst 3750X 48 Port Data IP Base	2	10%	$700	$1,260
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Gill Hall Elementary School - Closet A (67 Ports)				
WS-C2960S-48TD-L	Catalyst 2960S 48 GigE, 2 x 10G SFP+ LAN Base	1	38%	$6,995	$4,337
SFP-10G-SR=	10GBASE-SR SFP Module	1	38%	$1,495	$927
CAB-16AWG-AC	AC Power cord, 16AWG	1	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	1	38%	$1,500	$930
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	1	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	1	38%	$0	$0
WS-C2960S-24TD-L	Catalyst 2960S 24 GigE, 2 x 10G SFP+ LAN Base	1	38%	$4,495	$2,787
CAB-16AWG-AC	AC Power cord, 16AWG	1	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	1	38%	$1,500	$930
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	1	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	1	38%	$0	$0
CON-SNT-2960S2TD	SMARTNET 8X5XNBD Cat 2960S Stk 24 GigE,2x10G SFP+LAN Base	1	10%	$325	$293
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Sub-total Gill Hall Elementary School:				**$31,100**
	Labor: Design, Installation and acceptance testing:				**$6,220**
	Total Gill Hall Elementary School:				**$37,320**

Gill Hall Elementary School -Phase 2

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

27-Feb-12

GILL HALL ELEMENTARY SCHOOL
HVAC - Cooling/Ventilation for Telecom Closets

LABOR HR
$75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Cooling/Ventilation for Telecom Closets												
		1.5 Ton wall mounted DX split systm	ea	1	$3,450.00	$1,800.00	$1,650.00	$3,450.00	24.000	$1,650.00	$1,800.00	24
		Condensate piping	ls	1	$520.00	$300.00	$220.00	$520.00	4.000	$220.00	$300.00	4
		Power Wiring	ls	1	$697.50	$450.00	$247.50	$697.50	6.000	$247.50	$450.00	6
		Fan	ea	1	$685.00	$300.00	$385.00	$685.00	4.000	$385.00	$300.00	4
		Power Wiring	ls	1	$260.00	$150.00	$110.00	$260.00	2.000	$110.00	$150.00	2
		Control Wiring	ls	1	$205.00	$150.00	$55.00	$205.00	2.000	$55.00	$150.00	2
		TOTAL				$3,150.00	$2,667.50	$5,817.50				42.00

Gill Hall Elementary School -Phase 2

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

27-Feb-12

GILL HALL ELEMENTARY SCHOOL
ADD (4) RECEPTACLES PER CLASSROOM

LABOR HR
$75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Add (4) Receptacles per Classroom												
		Electric Metallic Tubing, 3/4"	ft	140	$5.75	$651.00	$154.00	$805.00	0.062	$1.10	$4.65	8.68
		600V, copper, MC cable, #12, 3-wire	ft	2100	$4.02	$5,670.00	$2,772.00	$8,442.00	0.036	$1.32	$2.70	75.6
		Wire, 600Volt, type THWN, copper, solid #12	ft	1050	$0.13	$0.00	$136.50	$136.50	0.000	$0.13	$0.00	0
		Pull Branch circuit homeruns	ea	14	$93.75	$1,312.50	$0.00	$1,312.50	1.250	$0.00	$93.75	17.5
		1G Device Box - Ivory	ea	56	$39.00	$1,260.00	$924.00	$2,184.00	0.300	$16.50	$22.50	16.8
		Receptacle, duplex, 120V, 20Amp	ea	56	$24.70	$1,260.00	$123.20	$1,383.20	0.300	$2.20	$22.50	16.8
		SG Face plate, 1-port, ivory	ea	14	$8.60	$105.00	$15.40	$120.40	0.100	$1.10	$7.50	1.4
		Panelboard	ea	2	$2,300.00	$2,400.00	$2,200.00	$4,600.00	16.000	$1,100.00	$1,200.00	32
		Labeling	ea	14	$4.61	$63.00	$1.54	$64.54	0.060	$0.11	$4.50	0.84
		As-built drawings	ls	1	$300.00	$300.00	$0.00	$300.00	4.000	$0.00	$300.00	4
		Miscellaneous	ls	1	$2,350.00	$1,800.00	$550.00	$2,350.00	24.000	$550.00	$1,800.00	24
		core drills/sleeves	ea	4	$97.00	$300.00	$88.00	$388.00	1.000	$22.00	$75.00	4
		Testing	ea	14	$6.23	$87.22	$0.00	$87.22	0.083	$0.00	$6.23	1.162
		Performance Bond	ls	1	$570.00	$75.00	$495.00	$570.00	1.000	$495.00	$75.00	1
		TOTAL				$15,283.72	$7,459.64	$22,743.36				203.78

McClellan Elementary School -Phase 2

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

27-Feb-12

MCCLELLAN ELEMENTARY SCHOOL
STRUCTURED CABLING SYSTEM

LABOR HR
$75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Structured Cabling												
		Mobilization	ls	1	$3,000.00	$3,000.00	$0.00	$3,000.00	40.000	$0.00	$3,000.00	40
Superior Essex	61110-R*6	Category 6+ UTP Cable, CMP	ft	32340	$0.49	$0.00	$15,846.60	$15,846.60	0.000	$0.49	$0.00	0
Superior Essex	4412AYG01	12-strand, 50micron, Fiber Optic Cable, CMP	ft	250	$1.88	$150.00	$320.00	$470.00	0.008	$1.28	$0.60	2
		1" Plenum Innerduct,corrogated	ft	250	$4.40	$562.50	$537.50	$1,100.00	0.030	$2.15	$2.25	7.5
Leviton	42080-1IS	SG Face plate, 1-port, ivory	ea	111	$5.88	$416.25	$236.43	$652.68	0.050	$2.13	$3.75	5.55
Leviton	42080-6IS	SG Face plate, 6-port, ivory	ea	6	$5.88	$22.50	$12.78	$35.28	0.050	$2.13	$3.75	0.3
Leviton	41087-2IP	Duplex mounting strap	ea	0	$5.79	$0.00	$0.00	$0.00	0.050	$2.04	$3.75	0
Leviton	61110-RA6	1-RJ45 Jack, 568B, Cat 6+	ea	147	$10.68	$0.00	$1,569.96	$1,569.96	0.000	$10.68	$0.00	0
Leviton	69586-U24	Patch Panel, Cat 6+, 24-port	ea	0	$302.40	$0.00	$0.00	$0.00	0.250	$283.65	$18.75	0
Leviton	69586-U48	Patch Panel, Cat 6+, 48-port, 568B	ea	5	$577.53	$93.75	$2,793.90	$2,887.65	0.250	$558.78	$18.75	1.25
Leviton	49252-PCM	Combo Front and Rear Cable Manager, 2RU	ea	7	$117.75	$131.25	$693.00	$824.25	0.250	$99.00	$18.75	1.75
Leviton	5R1UH-S03	Opt-X Ultra 1RU Fiber Enclosure	ea	2	$505.25	$150.00	$860.50	$1,010.50	1.000	$430.25	$75.00	2
Leviton	5R2UH-S06	Opt-X Ultra 2RU Fiber Enclosure	ea	0	$644.10	$0.00	$0.00	$0.00	1.000	$569.10	$75.00	0
Leviton	5R4UH-S12	Opt-X Ultra 4RU Fiber Enclosure	ea	0	$911.21	$0.00	$0.00	$0.00	1.500	$798.71	$112.50	0
Leviton	5F100-3BC	3-Pack Duplex SC MM (6-fiber) Plate	ea	4	$53.68	$6.00	$208.72	$214.72	0.020	$52.18	$1.50	0.08
Leviton	5F100-6AC	6-Pack Duplex SC MM (12-fiber) Plate	ea		$99.88	$0.00	$0.00	$0.00	0.020	$98.38	$1.50	0
Leviton	5F100-BPP	Blank insert panel	ea	2	$7.61	$1.50	$13.72	$15.22	0.010	$6.86	$0.75	0.02
Leviton	49991-LSC	FastCAM SC 50/125 MM Connector	ea	24	$41.99	$450.00	$557.76	$1,007.76	0.250	$23.24	$18.75	6
Leviton	5LDSC-M03	SC-SC Laser Optimized MM Patch, 3 meters	ea	4	$22.59	$9.00	$81.36	$90.36	0.030	$20.34	$2.25	0.12
Leviton	5LDSC-M05	SC-SC Laser Optimized MM Patch, 5 meters	ea	4	$25.60	$9.00	$93.40	$102.40	0.030	$23.35	$2.25	0.12
Leviton	6D460-03	Cat 6 Slimline UTP Patch Cable, 3 ft.	ea	98	$13.75	$257.74	$1,089.76	$1,347.50	0.035	$11.12	$2.63	3.43
Leviton	6D460-05	Cat 6 Slimline UTP Patch Cable, 5 ft.	ea	98	$15.02	$257.74	$1,214.22	$1,471.96	0.035	$12.39	$2.63	3.43
Leviton	6D460-07	Cat 6 Slimline UTP Patch Cable, 7 ft.	ea	98	$16.25	$257.74	$1,334.76	$1,592.50	0.035	$13.62	$2.63	3.43
Chatsworth		19" Equipment rack	ea	0	$493.60	$0.00	$0.00	$0.00	4.000	$193.60	$300.00	0
Chatsworth		Wall mounted equipment rack, 48"	ea	2	$868.00	$900.00	$836.00	$1,736.00	6.000	$418.00	$450.00	12
Leviton	8980L-VFO	Vertical 80" Channel	ea	0	$860.30	$0.00	$0.00	$0.00	6.000	$410.30	$450.00	0
Leviton	P1071-10S	Surge protected Vertical PDU	ea	2	$616.10	$900.00	$332.20	$1,232.20	6.000	$166.10	$450.00	12
Erico Prod	CAT12	Category 5 j-hooks	ea	50	$9.15	$375.00	$82.50	$457.50	0.100	$1.65	$7.50	5
Erico Prod	CAT21	Category 5 j-hooks	ea	0	$16.93	$0.00	$0.00	$0.00	0.200	$1.93	$15.00	0
Erico Prod	CAT32	Category 5 j-hooks	ea	0	$17.48	$0.00	$0.00	$0.00	0.200	$2.48	$15.00	0
Cisco	AIR-PWRINJ4=	Power Injector for Wireless Access Points	ea	6	$201.40	$225.00	$983.40	$1,208.40	0.500	$163.90	$37.50	3
Legrand	V500	One-piece Steel Raceway, Ivory	ft	250	$7.30	$1,500.00	$325.00	$1,825.00	0.080	$1.30	$6.00	20
Legrand	V5748	1G Device Box - Ivory	ea	25	$33.50	$562.50	$275.00	$837.50	0.300	$11.00	$22.50	7.5
Legrand	V2400BD	Divided Steel Raceway, 2400 Base, Ivory	ft	750	$13.11	$8,437.50	$1,395.00	$9,832.50	0.150	$1.86	$11.25	112.5
Legrand	V2400C	Steel Racway Cover	ft	750	$4.97	$2,812.50	$915.00	$3,727.50	0.050	$1.22	$3.75	37.5
Legrand	V2411DFO	Divided Stl Flat FiberReady Elbow	ea	25	$32.29	$375.00	$432.25	$807.25	0.200	$17.29	$15.00	5
Legrand	2444D	1G Device Box - Ivory	ea	100	$39.00	$2,250.00	$1,650.00	$3,900.00	0.300	$16.50	$22.50	30
Legrand	V2410BD	Stl Divided End Blank 2400 Ivory	ea	25	$8.46	$187.50	$24.00	$211.50	0.100	$0.96	$7.50	2.5
		Electric Metallic Tubing, 3/4"	ft	300	$5.75	$1,395.00	$330.00	$1,725.00	0.062	$1.10	$4.65	18.6
		Wire, 600Volt, type THWN, copper, solid #12	ft	900	$0.13	$0.00	$117.00	$117.00	0.000	$0.13	$0.00	0
		Pull Branch circuit homeruns	ea	2	$93.75	$187.50	$0.00	$187.50	1.250	$0.00	$93.75	2.5
		1G Device Box - Ivory	ea	2	$39.00	$45.00	$33.00	$78.00	0.300	$16.50	$22.50	0.6
		Receptacle, duplex, 120V, 20Amp	ea	2	$24.70	$45.00	$4.40	$49.40	0.300	$2.20	$22.50	0.6
		SG Face plate, 1-port, ivory	ea	2	$8.60	$15.00	$2.20	$17.20	0.100	$1.10	$7.50	0.2
		Plywood	ls	2	$185.00	$150.00	$220.00	$370.00	1.000	$110.00	$75.00	2
		Terminate 4-pair	ea	294	$6.23	$1,831.62	$0.00	$1,831.62	0.083	$0.00	$6.23	24.402
		Pull Cables, multiples of	1	16	$112.50	$1,800.00	$0.00	$1,800.00	1.500	$0.00	$112.50	24
		Pull Cables, multiples of	2	0	$123.75	$0.00	$0.00	$0.00	1.650	$0.00	$123.75	0
		Pull Cables, multiples of	3	0	$131.25	$0.00	$0.00	$0.00	1.750	$0.00	$131.25	0
		Pull Cables, multiples of	5	27	$187.50	$5,062.50	$0.00	$5,062.50	2.500	$0.00	$187.50	67.5
		Dress cables in closet spaces	ea	2	$450.00	$900.00	$0.00	$900.00	6.000	$0.00	$450.00	12
		Misc. term closet hardware	ea	2	$355.00	$600.00	$110.00	$710.00	4.000	$55.00	$300.00	8
		Labeling	ea	147	$4.61	$661.50	$16.17	$677.67	0.060	$0.11	$4.50	8.82
		Firestopping	ea	30	$22.25	$337.50	$330.00	$667.50	0.150	$11.00	$11.25	4.5
		Fiber optic testing	ea	12	$7.50	$90.00	$0.00	$90.00	0.100	$0.00	$7.50	1.2
		Category 5 testing	ea	147	$6.00	$882.00	$0.00	$882.00	0.080	$0.00	$6.00	11.76
		As-built drawings	ls	1	$600.00	$600.00	$0.00	$600.00	8.000	$0.00	$600.00	8
		Certification/ Warranty	ls	1	$600.00	$600.00	$0.00	$600.00	8.000	$0.00	$600.00	8
		Miscellaneous	ls	1	$3,440.00	$3,000.00	$440.00	$3,440.00	40.000	$440.00	$3,000.00	40
		core drills/sleeves	ea	2	$97.00	$150.00	$44.00	$194.00	1.000	$22.00	$75.00	2
		Remove/replace ceiling tile	ea	1	$2,400.00	$2,400.00	$0.00	$2,400.00	32.000	$0.00	$2,400.00	32
		Replace damaged ceiling tiles	sf	500	$2.60	$750.00	$550.00	$1,300.00	0.020	$1.10	$1.50	10
		Performance Bond	ls	1	$1,395.00	$75.00	$1,320.00	$1,395.00	1.000	$1,320.00	$75.00	1
		TOTAL				$45,877.59	$38,231.49	$84,109.08				611.66

McClellan Elementary School -Replace Network Electronics - Phase 2

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

Product	Description	Quantity	Discount	Price	Ext Price
	McClellan Elementary School - Main Closet (139 ports)				
WS-C3750X-48T-S	Catalyst 3750X 48 Port Data IP Base	3	38%	$11,500	$21,390
S375XVK9T-12258SE	CAT 3750X IOS UNIVERSAL WITH WEB BASE DEV MGR	3	38%	$0	$0
C3KX-NM-10G	Catalyst 3K-X 10G Network Module option PID	3	38%	$2,500	$4,650
SFP-10G-SR=	10GBASE-SR SFP Module	1	38%	$1,495	$927
CAB-STACK-50CM	Cisco StackWise 50CM Stacking Cable	3	38%	$0	$0
CAB-SPWR-30CM	Catalyst 3750X Stack Power Cable 30 CM	3	38%	$0	$0
CAB-3KX-AC	AC Power Cord for Catalyst 3K-X (North America)	3	38%	$0	$0
C3KX-PWR-350WAC	Catalyst 3K-X 350W AC Power Supply	3	38%	$0	$0
CON-SNT-3750X4TS	SMARTNET 8X5XNBD Catalyst 3750X 48 Port Data IP Base	3	10%	$700	$1,890
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	McClellan Elementary School - Closet A (71 Ports)				
WS-C2960S-48TD-L	Catalyst 2960S 48 GigE, 2 x 10G SFP+ LAN Base	1	38%	$6,995	$4,337
SFP-10G-SR=	10GBASE-SR SFP Module	1	38%	$1,495	$927
CAB-16AWG-AC	AC Power cord, 16AWG	1	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	1	38%	$1,500	$930
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	1	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	1	38%	$0	$0
CON-SNT-2960S4TD	SMARTNET 8X5XNBD Cat2960S Stk48 GigE,2x10G SFP+ LAN Base	1	10%	$325	$293
WS-C2960S-24TD-L	Catalyst 2960S 24 GigE, 2 x 10G SFP+ LAN Base	1	38%	$4,495	$2,787
CAB-16AWG-AC	AC Power cord, 16AWG	1	38%	$0	$0
C2960S-STACK	Catalyst 2960S FlexStack Stack Module optional for LAN Base	1	38%	$1,500	$930
CAB-STK-E-0.5M	Cisco FlexStack 50cm stacking cable	1	38%	$0	$0
PWR-CLIP	Power retainer clip for compact switches	1	38%	$0	$0
CON-SNT-2960S2TD	SMARTNET 8X5XNBD Cat 2960S Stk 24 GigE,2x10G SFP+LAN Base	1	10%	$325	$293
SMART-UPS	APC SMART-UPS	1	10%	$1,500	$1,350
	Sub-total McClellan Elementary School:				**$42,053**
	Labor: Design, Installation and acceptance testing:				**$8,411**
	Total McClellan Elementary School:				**$50,463**

McClellan Elementary School -Phase 2

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

27-Feb-12

MCCLELLAN ELEMENTARY SCHOOL
HVAC - Cooling for Telecom Closets

LABOR HR
$75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Cooling for Telecom Closets												
		1.5 Ton wall mounted DX split systm	ea	1	$3,450.00	$1,800.00	$1,650.00	$3,450.00	24.000	$1,650.00	$1,800.00	24
		Condensate piping	ls	1	$520.00	$300.00	$220.00	$520.00	4.000	$220.00	$300.00	4
		Power Wiring	ls	1	$697.50	$450.00	$247.50	$697.50	6.000	$247.50	$450.00	6
		TOTAL				$2,550.00	$2,117.50	$4,667.50				34.00

McClellan Elementary School -Phase 2

LOFTUS ENGINEERS
555 NORTH BELL AVENUE
CARNEGIE, PA 15222
Telephone (412) 489-9127

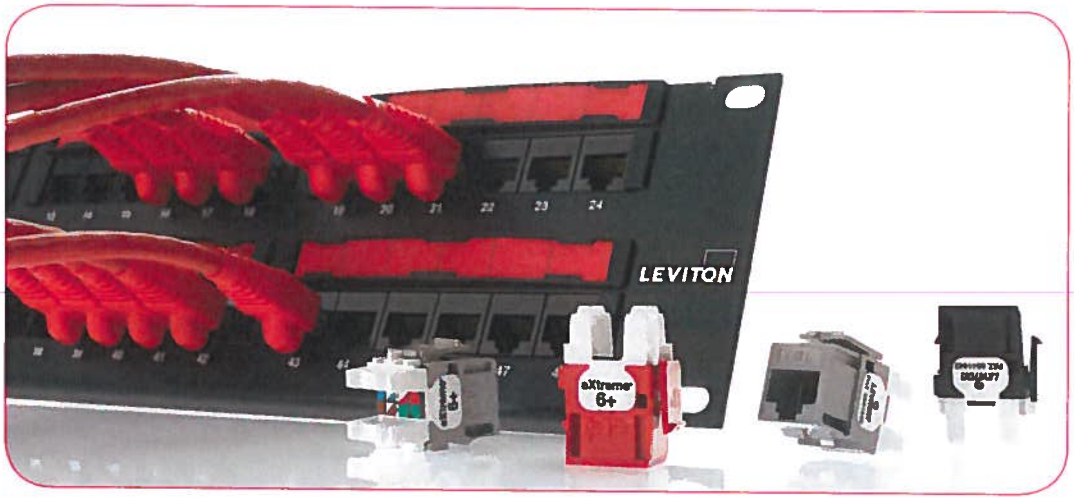
27-Feb-12

MCCLELLAN ELEMENTARY SCHOOL
ADD (4) RECEPTACLES PER CLASSROOM

LABOR HR
$75.00

MANUFACTURER	MODEL NO.	DESCRIPTION	UNITS	QUANTITY REQUIRED	L&M UNIT PRICE	ITEM TOTAL LABOR	ITEM TOTAL MAT'LS	EXTENDED ITEM PRICE	UNIT HOUR	UNIT MAT'L	UNIT LABOR	LABOR HOURS
Add (4) Receptacles per Classroom												
		Electric Metallic Tubing, 3/4"	ft	250	$5.75	$1,162.50	$275.00	$1,437.50	0.062	$1.10	$4.65	15.5
		600V, copper, MC cable, #12, 3-wire	ft	3750	$4.02	$10,125.00	$4,950.00	$15,075.00	0.036	$1.32	$2.70	135
		Wire, 600Volt, type THWN, copper, solid #12	ft	1875	$0.13	$0.00	$243.75	$243.75	0.000	$0.13	$0.00	0
		Pull Branch circuit homeruns	ea	25	$93.75	$2,343.75	$0.00	$2,343.75	1.250	$0.00	$93.75	31.25
		1G Device Box - Ivory	ea	100	$39.00	$2,250.00	$1,650.00	$3,900.00	0.300	$16.50	$22.50	30
		Receptacle, duplex, 120V, 20Amp	ea	100	$24.70	$2,250.00	$220.00	$2,470.00	0.300	$2.20	$22.50	30
		SG Face plate, 1-port, ivory	ea	25	$8.60	$187.50	$27.50	$215.00	0.100	$1.10	$7.50	2.5
		Panelboard	ea	2	$2,300.00	$2,400.00	$2,200.00	$4,600.00	16.000	$1,100.00	$1,200.00	32
		Labeling	ea	25	$4.61	$112.50	$2.75	$115.25	0.060	$0.11	$4.50	1.5
		As-built drawings	ls	1	$300.00	$300.00	$0.00	$300.00	4.000	$0.00	$300.00	4
		Miscellaneous	ls	1	$2,350.00	$1,800.00	$550.00	$2,350.00	24.000	$550.00	$1,800.00	24
		core drills/sleeves	ea	4	$97.00	$300.00	$88.00	$388.00	1.000	$22.00	$75.00	4
		Testing	ea	25	$6.23	$155.75	$0.00	$155.75	0.083	$0.00	$6.23	2.075
		Performance Bond	ls	1	$790.00	$75.00	$715.00	$790.00	1.000	$715.00	$75.00	1
		TOTAL				$23,462.00	$10,922.00	$34,384.00				312.83

Equipment Cutsheets



eXtreme® 6+ CAT 6 UTP System

Choose eXtreme 6+ for craft-friendly installation and outstanding CAT 6 performance. Exceptional headroom above CAT 6 requirements provides no-risk performance for a variety of critical applications.

- Independently verified to exceed TIA-568-C.2 CAT 6 requirements for channel and component-level performance, ISO/IEC 11801 2nd Ed. Class E requirements, and IEEE 1000BASE-T (802.ab)
- Optimized for maximum throughput and reliable transmission
- Guaranteed channel margin with approved cable

EXTREME 6+ CAT 6 PATCH PANELS (see pages A11-A17)

- Patented Retention Force Technology protects tines from damage from 4- or 6-pin plugs
- Universal T568A and T568B wiring cards for 110-style IDC terminations
- TIA-606 compliant labeling for easy port identification
- Numerous 110-style, QuickPort®, and C1 Ultra composite flat and angled options to meet any application needs

EXTREME® 6+ CAT 6 110-STYLE WIRING BLOCK (see page A20)

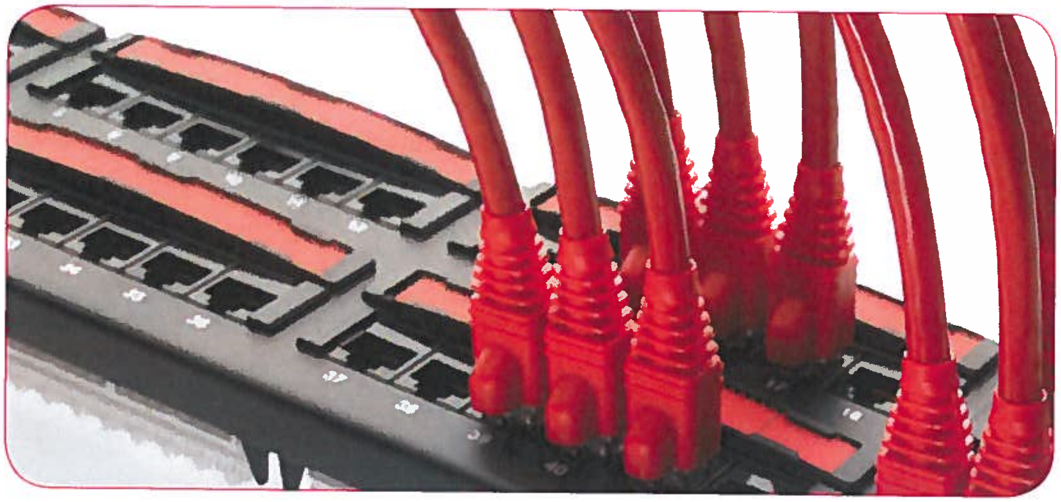
- 96- and 288-pair wall-mount options
- 96-, 192-, and 288-pair rack-mount options
- Can be used as a consolidation point (CP)

EXTREME 6+ CAT 6 PATCH CORDS (see pages A27-A28)

- Component-rated for optimal channel performance
- Stranded 24-gauge wire ensures sufficient flex life and long-term integrity
- Standard booted and SlimLine plug options
- SlimLine profile reduces congestion in higher density applications
- Snagless boot design prevents tab breakage during moves, adds, and changes
- Strain relief boot ensures long-term network performance

EXTREME 6+ CAT 6 QUICKPORT® CONNECTORS (see page A34)

- Patented Retention Force Technology protects tines from damage from 4- or 6-pin plugs
- Pair Separation Tower design facilitates separation of conductors
- Patented dual-layer wiring label simplifies punchdown and reduces rework
- Increased wire retention reduces tine contact failure caused by cable stress and fatigue
- Gas-tight connection at the IDC prevents corrosion
- 110-style rear termination field for easy termination when installed in a wallplate or panel
- Available in QuickPack® bulk packs



EXTREME® 6+ CAT 6 UTP SYSTEM	
DESCRIPTION	PART NO.
C1 Ultra Composite 110-Style Patch Panel	C1686-U48
eXtreme 6+ CAT 6 Flat 110-Style Patch Panel	69586-U**
eXtreme 6+ CAT 6 Angled 110-Style Patch Panel	69587-U48
eXtreme 6+ CAT 6 Recessed-Angled 110-Style Patch Panel	6W587-U48
SlimLine CAT 6 Patch Cord	6D460-xx*
Standard CAT 6 Patch Cord	62460-xx*
eXtreme 6+ CAT 6 Wiring Block Kit	41††6-†F4
eXtreme 6+ CAT 6 QuickPort® Connector	61110-R*6

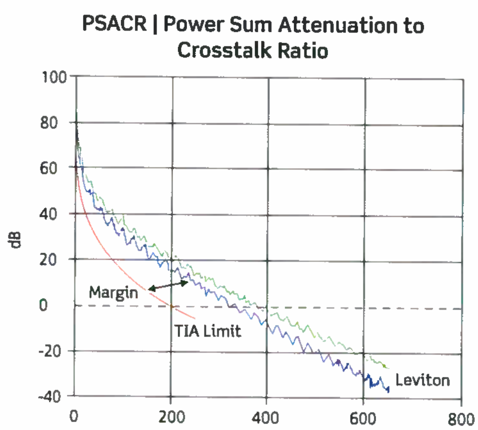
Patch Panels: ** = Port Density (12), (24), (48), (96). See pages A12 and A15.
Patch Cords: Available in six lengths (xx) and seven colors (*). See page A28.
Connectors: * = Color: Available in 13 colors. See page A34.

Wiring Block Kit: †† = With legs (AB), without legs (NB), rack-mount (DR).
† = Pair Count: 96 (1), 192 (2), 288 (3). See page A20.

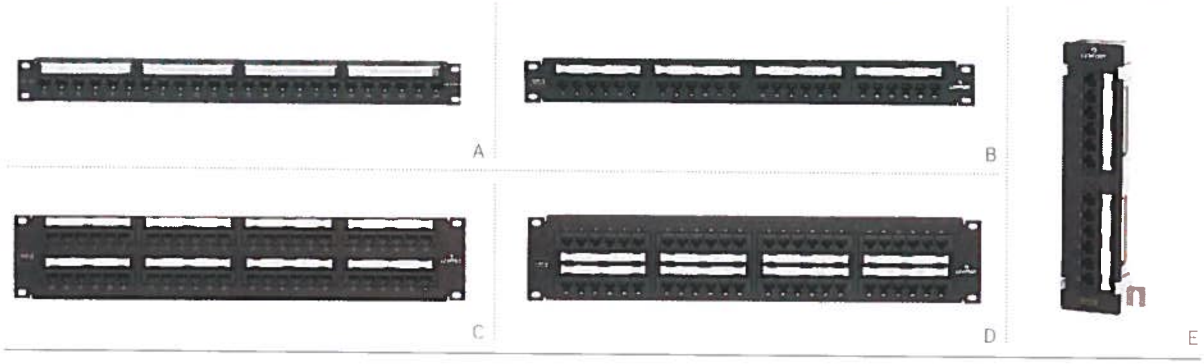
See pages A11-A17 for our wide selection of QuickPort patch panels.

CAT 6 INDEPENDENT 3RD PARTY (ETL) TEST RESULTS

4-Connector, 100-Meter Performance



Frequency (MHz): Red = TIA Limit Line, Blue = Worst Case, Green = Average



FLAT 110-STYLE COMPONENT-RATED UTP PANELS

- 1RU 12- or 24-port, 2RU 48-port, and 4RU 96-port configurations
- Available in CAT 6A, 6, and 5e
- 6-port RJ-45 modules on front, and 110-style punchdowns on rear
- Includes color codes for T568A/B wiring schemes
- CAT 5e and 6 include 25-pair wiring schemes
- Rear cable management bar included with panels (one bar per 24 ports)
- CAT 6A panels include magnified label holders for easy reading
- Silkscreened port numbers and paper label holders included
- Independently tested and verified by Intertek (ETL) to meet all TIA component, permanent link, and channel requirements

RoHS All Leviton CAT 6A/6/5e Patch Panels are RoHS Compliant

AVAILABLE CABLE MGMT.:

- Versi-Duct®
- Rear Cable Mgmt. Bars
- Horizontal Cable Managers
- Blank Filler Panels
- VELCRO® Brand Fasteners

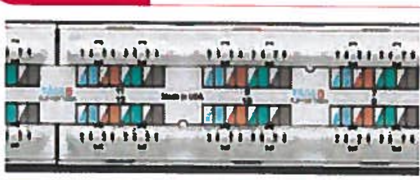
See Section C for product details and ordering information.

49005-CMB included w/ all CAT 6A/6/5e flat 110-style panels.

FLAT 110-STYLE PATCH PANELS & PATCH BLOCK

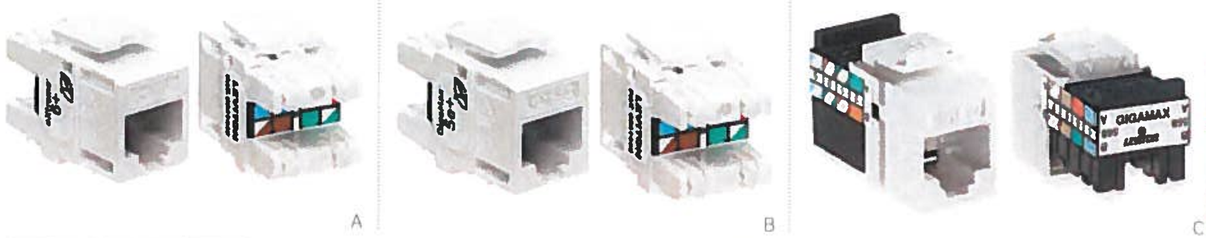
DESCRIPTION	CAT 6A	CAT 6	CAT 5e
1RU 12-Port Flat 110-Style Panel		69586-U12	5G596-U12
1RU 24-Port Flat 110-Style Panel	[A] 6A586-U24	[B] 69586-U24	5G596-U24
2RU 48-Port Flat 110-Style Panel	6A586-U48	[C] 69586-U48	5G596-U48
2RU 48-Port Flat 110-Style Panel, central labeling		[D] 69586-C48	5G596-C48
4RU 96-Port Flat 110-Style Panel		69586-U96	5G596-U96
12-Port 110-Style Patch Block, 89D bracket		[E] 69586-U89	5G596-U89

SPOTLIGHT CAT 6A Component-Rated 110-Style Panels



Leviton CAT 6A 110-style patch panels offer TIA-568-C.2 performance up to 500 MHz to support 10GBASE-T networks. The panels have a physical design consistent with industry standard 110-style panels, including in-line configured IDCs and 6-port housing modules. In addition, they add several exclusive design features:

- Pair Separation Tower design makes untwisting CAT 6A pairs easier
- Separated IDC fields simplify identifying first cable pair position
- Conductor retention feature holds conductors securely in place during termination
- Triple-stage compensation with patented design features enhances permanent link and channel performance



A B C

QUICKPORT CAT 6 UTP CONNECTORS

eXtreme® 6+ component-rated connectors include several features that deliver ease-of-use and superior performance:

- Patented Retention Force Technology (RFT) protects tines from damage from 4- or 6-pin plugs
- Pair Separation Tower design facilitates separation of conductors
- Patented dual-layer wiring label simplifies punchdown and reduces rework
- Increased wire retention reduces tine contact failure caused by cable stress and fatigue
- Gas-tight connection at the IDC prevents corrosion
- 110-style rear termination field for easy termination when installed in a wallplate or panel

QUICKPORT CAT 5E UTP CONNECTORS

See "CAT 6 & 5e Termination Instructions" on pages X7-X8.

Leviton offers two CAT 5e connectors, the GigaMax® 5e+ (5G110-xxx) and 5e (5G108-xxx). Both provide 1000BASE-T performance for high-bandwidth applications.

GigaMax CAT 5e+ (61110) connectors include exclusive performance-enhancing features:

- Component-rated for optimal channel performance
- RFT protects tines from damage from 4- or 6-pin plugs
- Pair Separation Towers facilitate quick, effective termination
- Patented dual-layer wiring label simplifies punchdown and reduces rework

RoHS All Leviton Category-Rated and USOC Connectors are RoHS Compliant

QUICKPORT CAT 6/5e+/5e UTP CONNECTORS

DESCRIPTION	PART NO.	QUICKPACK 25/BAG
[A] eXtreme 6+ CAT 6 Connector	61110-R*6	61110-B*6
[B] GigaMax 5e+ CAT 5e Connector	5G110-R*5	5G110-B*5
[C] GigaMax 5e CAT 5e Connector	5G108-R*5	5G108-B*5

* = Colors: Choose from any of the colors below.

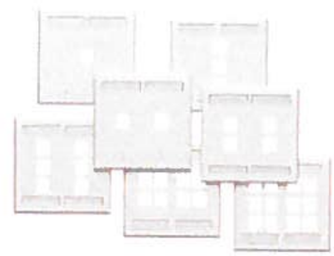
White (W) · Light Almond (T) · Ivory (I) · Yellow (Y) · Orange (O) · Crimson (C) · Dark Red (R) · Purple (P) · Blue (L) · Green (V) · Grey (G) · Black (E) · Brown (B)

SPOTLIGHT Component- vs. Channel-Rated Performance

All category-rated solutions are channel-rated, meaning that the end-to-end system has been tested to perform at or above its standard's requirements. Component-rated performance is more stringent than channel-rated: Each connectivity element is guaranteed to meet or exceed the standard's performance, resulting in higher permanent link and channel margins for the system as a whole.

A

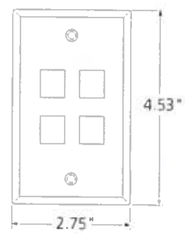
B



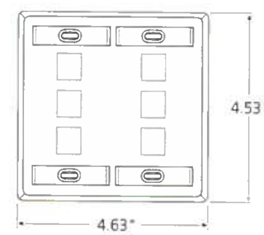
C

QUICKPORT STANDARD PLASTIC WALLPLATES

- Compatible with all QuickPort connectors and adapters
- Manufactured from ABS plastic for superior resistance to impact, chemicals, and solvents, as compared to other plastics
- A variety of color choices, with color-matched screws
- cULus Listed, fire-retardant material rated UL 94V-0
- NAFTA-compliant single-gang wallplates are also available. To order, change 41080-xxx part numbers to 45080-xxx, and 42080-xxx part numbers to 46080-xxx. Both styles are available in white or ivory.



Single-Gang



Dual-Gang

[A] QUICKPORT SINGLE-GANG WALLPLATES

DESCRIPTION	WHITE	LT. ALMOND	IVORY	GREY	BLACK	BROWN
6-Port Wallplate	41080-6WP	41080-6TP	41080-6IP	41080-6GP	41080-6EP	41080-6BP
4-Port Wallplate	41080-4WP	41080-4TP	41080-4IP	41080-4GP	41080-4EP	41080-4BP
3-Port Wallplate	41080-3WP	41080-3TP	41080-3IP	41080-3GP	41080-3EP	41080-3BP
2-Port Wallplate	41080-2WP	41080-2TP	41080-2IP	41080-2GP	41080-2EP	41080-2BP
1-Port Wallplate	41080-1WP	41080-1TP	41080-1IP	41080-1GP	41080-1EP	41080-1BP

[B] QUICKPORT SINGLE-GANG WALLPLATES WITH ID WINDOWS

DESCRIPTION	WHITE	LT. ALMOND	IVORY	GREY	BLACK
6-Port Wallplate	42080-6WS	42080-6TS	42080-6IS	42080-6GS	42080-6ES
4-Port Wallplate	42080-4WS	42080-4TS	42080-4IS	42080-4GS	42080-4ES
3-Port Wallplate	42080-3WS	42080-3TS	42080-3IS	42080-3GS	42080-3ES
2-Port Wallplate	42080-2WS	42080-2TS	42080-2IS	42080-2GS	42080-2ES
1-Port Wallplate*	42080-1WS	42080-1TS	42080-1IS	42080-1GS	42080-1ES

[C] QUICKPORT DUAL-GANG WALLPLATES WITH ID WINDOWS

DESCRIPTION	WHITE	LT. ALMOND	IVORY	GREY	BLACK
12-Port Wallplate	42080-12W	42080-12T	42080-12I	42080-12G	42080-12E
8-Port Wallplate	42080-8WP	42080-8TP	42080-8IP	42080-8GP	42080-8EP
6-Port Wallplate	42080-6WP	42080-6TP	42080-6IP	42080-6GP	42080-6EP
4-Port Wallplate	42080-4WP	42080-4TP	42080-4IP	42080-4GP	42080-4EP
3-Port Wallplate	42080-3WP	42080-3TP	42080-3IP	42080-3GP	42080-3EP
2-Port Wallplate†	42080-2WP	42080-2TP	42080-2IP	42080-2GP	42080-2EP
1-Port Wallplate†	42080-1WP	42080-1TP	42080-1IP	42080-1GP	42080-1EP

Wallplates are sold empty. See pages A33-A40 for QuickPort connectors.
*Single-gang 1-Port Wallplate only has one ID window on top.
†Dual-gang 1- and 2-Port Wallplates only have two ID windows on top.

All Leviton patch cords are components of a category-rated network infrastructure solution that also includes connectors, patch panels, and approved Leviton partner cabling. For optimum performance and full system warranty, use a Leviton Contractor Program installer to install your Leviton components.

CAT 6A PATCH CORDS

- Same cord for UTP or shielded installations
- Component-rated for optimum channel performance
- Independently tested and verified by Intertek (ETL) to meet TIA-568-C.2 component and channel requirements
- Provides exceptional alien crosstalk (AXT) suppression in CAT 6A channel
- Feature narrow profile SlimLine plug for less congestion in high-density applications
- Strain relief boot ensures long-term network performance
- Snagless design prevents tab breakage
- Outside diameter of .240" is easier to manage
- 26-gauge stranded cable for maximum flexibility
- Low-Smoke Zero-Halogen (LSZH) Cords available
- Leviton patch cord required for channel warranty

CAT 6/5e UTP & SHIELDED PATCH CORDS

- Independently tested and verified by Intertek (ETL)
- CAT 6/5e cords are component-rated for optimum channel performance
- UTP available with standard or SlimLine plug
- 24-gauge stranded cable for maximum flexibility
- Standard plugs feature overmolded boot to protect plug
- SlimLine styles feature narrow profile plug to reduce congestion in high-density applications
- SlimLine styles strain-relief boot ensures long-term network performance
- SlimLine styles snagless boot design prevents tab breakage
- Low-Smoke Zero-Halogen (LSZH) Cords available
- Leviton patch cord required for channel warranty
- Standard shielded style for EMI/RFI protection

A Culture of Ingenuity & Innovation

Jeff Seefried

Development Engineer Manager

Jeff directs a group of accomplished engineers and technicians who invent our cutting-edge copper connectivity. He helped design Leviton's CAT 6 component-rated QuickPort® connector and patch panel, and his department developed the first third-party verified CAT 6A component-rated connector, well ahead of the competition. In addition to creating the technologies that advance connector design, Jeff's team is constantly checking and improving existing products on the line and supporting production quality.

CATEGORY 6A SLIMLINE PATCH CORDS		
DESCRIPTION		CAT 6A
[A] SlimLine CAT 6A Patch Cord (same cord for UTP or shielded installations)		6AS10-xx*
[B] CAT 6A Low-Smoke Zero-Halogen (LSZH) Patch Cord		6AZ10-xx*
UTP PATCH CORDS		
DESCRIPTION	CAT 6	CAT 5e
[C] Standard UTP Patch Cord, matching boot	62460-xx*	5G460-xx*
[D] SlimLine UTP Patch Cord	6D460-xx*	5D460-xx*
SlimLine UTP Low-Smoke Zero-Halogen (LSZH) Patch Cord	6Z460-††°	5Z460-††°
SHIELDED PATCH CORDS		
DESCRIPTION	CAT 6	CAT 5e
[E] Standard Shielded Patch Cord, matching boot, grey only	6S460-xxS	5S460-xxS

STANDARD & SLIMLINE UTP CAT 6A/6/5E PATCH CORDS
xx = Length: (03), (05), (07), (10), (15), or (20) feet.
* = Colors: Choose from any of the colors below.

White (W) Yellow (Y) Orange (O) Red (R) Blue (L) Green (G) Grey (S) Black (E)

RoHS All Leviton CAT 6A/6 and 5e Patch Cords are RoHS Compliant

SlimLine plug detail

SLIMLINE FTP LSZH CAT 6A PATCH CORDS
SLIMLINE UTP LSZH CAT 6/5E PATCH CORDS
†† = Colors: Choose from any of the colors below.
° = Length (1), (2), (3), or (5) meters.

White (WH) Blue (BL) Grey (GY)

Custom length cords available, call inside sales at 800.722.2082 for more information.

PART NUMBER CONFIGURATOR – COPPER PATCH CORDS

Build your own! leviton.com/configurator

Example: **6D460-40R**; Slimline CAT 6 UTP, stranded cable, 40-foot length, red cable color.

FOR ASSISTANCE CONFIGURING YOUR COPPER PATCH CORD, PLEASE CALL 800.722.2082 OR VISIT LEVITON.COM/CONFIGURATOR.

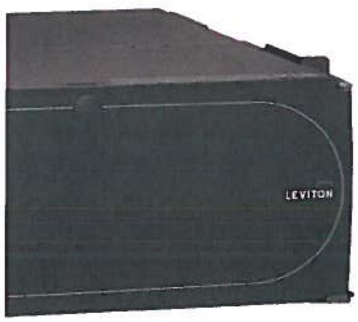
XXXX X XX X

CORD TYPE	CABLE TYPE	CABLE LENGTH	CABLE COLOR
5G46 = Cat 5e Standard	0 = Stranded	01-75 Feet	W = White
6246 = Cat 6 Standard	1 = Crossover		Y = Yellow
5D46 = Cat 5e Slimline			O = Orange
6D46 = Cat 6 Slimline			R = Red
6AS1 = Cat 6A Slimline			L = Blue
5S46 = Cat 5e Shielded			G = Green
6S46 = Cat 6 Shielded			V = Violet
5Z46 = Cat 5e LSZH			S = Grey
6Z46 = Cat 6 LSZH			E = Black

Notes:
1) Maximum length for patch cords according to TIA standards is 72 ft. For patch cords longer than 72 ft., please contact the MTO Team.
2) Cat 6A Minimum length = 3 ft.
Cat 6A Maximum length = 72 ft.
3) 6AS10 not available in Violet or Pink
4) 5Z460 & 6Z460 cords have lengths in meters, not feet. Low Smoke Zero Halogen (LSZH) cords are only available in blue, white, and grey colors.
5) 5G460 and 62460 cords in standard colors (W, Y, R, L, G, S, E) include color-matched boots. All other colors will be supplied with Grey boots.

OPT-X ULTRA®

Opt-X Ultra enclosures, designed for large enterprise and data centers, are packed full of features, including a removable sliding tray, transparent and removable hinged doors, and a 17" depth for high-density fiber termination. The enclosures achieve a unique high-end appearance using durable polycarbonate and 16-gauge powder-coated steel.



OPT-X® 1000i

The Opt-X 1000i rack-mount enclosure, built for medium enterprise applications, allows for easy field termination of connectors, splicing, or pre-terminated plug-n-play solutions. It is offered in 1RU to 4RU sizes, and features a sliding tray and fiber rings for cable routing.

OPT-X 500i

The economical Opt-X 500i rack-mount enclosure, ideal for small enterprise applications, features a one-piece removable cover for complete accessibility to the back of the enclosure. 500i enclosures are offered in 1RU, 2RU, and 3RU sizes.

HIGH-DENSITY REPLICATOR® ENCLOSURE

Leviton's high-density Replicator enclosures were developed to support Storage Area Network (SAN) switches. The port-replicated enclosures provide one-to-one logical port management (LPM) replication of the high-density fiber switches and other core equipment at main distribution. Each enclosure is tailored to customer-specified vendor equipment, including SAN architecture devices from Cisco, IBM, EMC, Brocade, and others. Kits, which include trunks, MTP® panels, and harnesses along with the enclosure, are available as well.

Quality and Performance in Every Solution

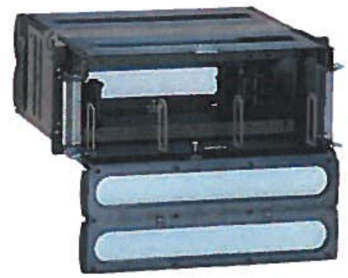
Gary Bernstein, RCDD, CDCD

Director of Product Management, Fiber & Data Center Solutions

Gary and his team have global responsibility for our fiber and data center solutions. With more than 15 years experience in the telecom industry, Gary has done a little bit of everything, from sales, marketing, and product management to representing Leviton on various TIA and IEEE standards committees. He speaks regularly at industry events, including DatacenterDynamics, AFCOM, and BICSI, and has authored several technical articles. Gary works closely with customers to deliver the right solutions for their applications, and when they need a unique solution, he will work with Leviton's engineering development team to build it.

A

B



C

OPT-X ULTRA 1RU/2RU/4RU RACK-MOUNT ENCLOSURES

- Stylish and innovative design for today's most advanced networks and settings
- Sliding tray removes completely from enclosure to facilitate field terminations and splicing
- Sliding tray with front and rear stop glides forward and backward providing accessibility to front and rear of bulkhead after installation
- 17" depth for high-density fiber termination and/or splicing
- Front saddles pivot for improved patch cord routing and organization
- Removable transparent hinged doors and slide-away covers allow easy access during install and visibility of interior after install
- Patch cord bend radius guides minimize macro bending
- Stackable and adjustable fiber rings simplify cable management
- Constructed of durable polycarbonate plastic and black powder-coated 16-gauge steel
- Multiple mounting bracket positions for 19" or 23" rack and cabinet installation (23" 1RU mounting bracket sold separately)
- Also accepts LightSpace® (LGX® Footprint) adapter plate mounting modules by special order
- Made in the United States

RECOMMENDED APPLICATIONS:

Data Centers

Equipment Room

Entrance Facility

Telecommunications Room

19" and 23" Racks and Cabinets

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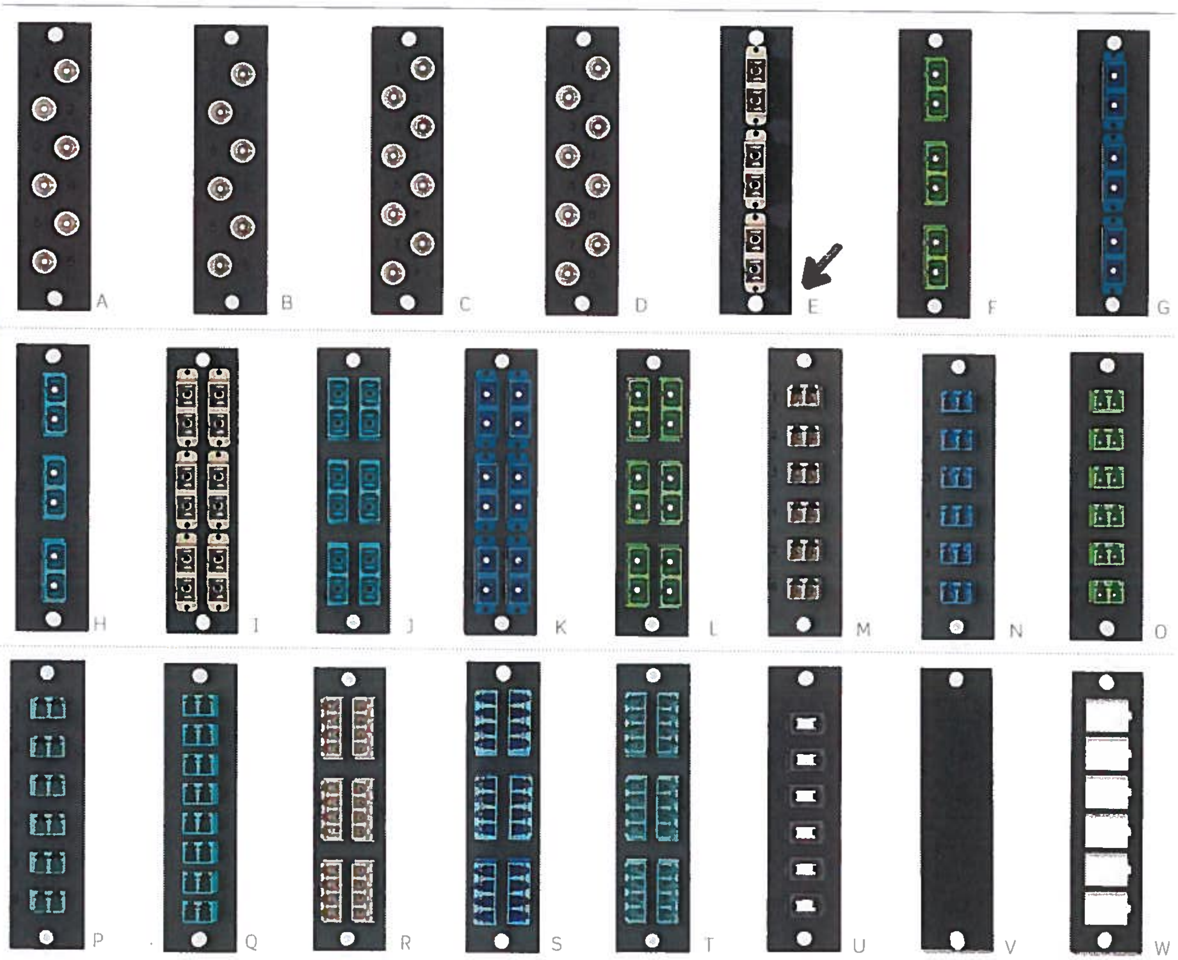
OPT-X ULTRA RACK-MOUNT ENCLOSURES

DESCRIPTION		MAXIMUM CAPACITY				PART NO.
		Fibers (using LC)	Adapter Plates AND	Splice Trays* OR	MTP Modules	
[A]	Opt-X Ultra 1RU, empty, sliding tray	72	3	3	3	5R1UH-S03
[B]	Opt-X Ultra 2RU, empty, sliding tray	144	6	6	6	5R2UH-S06
[C]	Opt-X Ultra 4RU, empty, sliding tray	288	12	12	12	5R4UH-S12

*Maximum splice tray capacity is limited by height of selected splice tray.
See page B32 for splice tray dimension and selection guide.

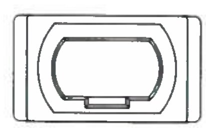
SPOTLIGHT Make To Order Enclosures

What do you get when you order a custom fiber enclosure from Leviton? Everything you need. Your order arrives in one box, with your modules or adapter plates, and splice trays already installed just as you specified. We put everything together for you, with no extra bags, boxes, or questions. All you have to do is plug and play.

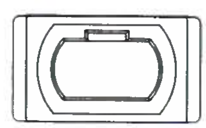


OPT-X ADAPTER PLATES

- Unique design works with Leviton's exclusive Opt-X series, including the advanced Opt-X Ultra®, as well as Opt-X 1000i, Opt-X 500i, and wall-mount Opt-X 1000
- Captive push/pull fasteners allow for quick, tool-free installation and removal
- Available in 3-, 6-, and 8-pack (6 to 24 fibers)
- Fits in all Opt-X rack-mount and wall-mount enclosures and VertiGO® panels
- Available in ST, SC, LC, and MTP®
- MTP and LC adapter plates with shutters available by special order



Key Down MTP Adapter



Key Up MTP Adapter

OPT-X ENCLOSURE DENSITY

RACK-MOUNT ENCLOSURES

1RU (for 1000i & 500i)	2RU (for 1000i & 500i)	3RU (for 1000i)	3RU (for 500i)	4RU (for 1000i)
Holds up to 3 adapter plates	*Holds up to 6 adapter plates*	*Holds up to 9/12 adapter plates*	*Holds up to 12 adapter plates*	*Holds up to 12/15 adapter plates*
6-pk ST = up to 18 fibers	6-pk ST = up to 36 fibers	6-pk ST = up to 54/72 fibers	6-pk ST = up to 72 fibers	6-pk ST = up to 72/90 fibers
8-pk ST = up to 24 fibers	8-pk ST = up to 48 fibers	8-pk ST = up to 72/96 fibers	8-pk ST = up to 96 fibers	8-pk ST = up to 96/120 fibers
3-pk Dplx SC = up to 18 fibers	3-pk Dplx SC = up to 36 fibers	3-pk Dplx SC = up to 54/72 fibers	3-pk Dplx SC = up to 72 fibers	3-pk Dplx SC = up to 72/90 fibers
6-pk Dplx SC = up to 36 fibers	6-pk Dplx SC = up to 72 fibers	6-pk Dplx SC = up to 108/144 fibers	6-pk Dplx SC = up to 144 fibers	6-pk Dplx SC = up to 144/180 fibers
6-pk Dplx LC = up to 36 fibers	6-pk Dplx LC = up to 72 fibers	6-pk Dplx LC = up to 108/144 fibers	6-pk Dplx LC = up to 144 fibers	6-pk Dplx LC = up to 144/180 fibers
6-pk Quad LC = up to 72 fibers	6-pk Quad LC = up to 144 fibers	6-pk Quad LC = up to 216/288 fibers	6-pk Quad LC = up to 288 fibers	6-pk Quad LC = up to 288/360 fibers
	8-pk Dplx LC = up to 96 fibers	8-pk Dplx LC = up to 144/192 fibers	8-pk Dplx LC = up to 192 fibers	8-pk Dplx LC = up to 192/240 fibers

OPT-X FIBER ADAPTER PLATES		
DESCRIPTION		PART NO.
[A]	6-Pack ST MM (6-fiber), phosphor bronze sleeve	5F100-1ST
[B]	6-Pack ST SM (6-fiber), zirconia ceramic sleeve	5F100-6ZT
[C]	8-Pack ST MM (8-fiber), phosphor bronze sleeve	5F100-8ST
[D]	8-Pack ST SM (8-fiber), zirconia ceramic sleeve	5F100-8ZT
[E]	3-Pack Duplex SC MM (6-fiber), beige, phosphor bronze sleeve	5F100-3BC
[F]	3-Pack Duplex SC/APC SM (6-fiber), green, zirconia ceramic sleeve	5F100-3CA
[G]	3-Pack Duplex SC SM (6-fiber), blue, zirconia ceramic sleeve	5F100-3ZC
[H]	3-Pack Duplex SC MM Laser Optimized (6-fiber), aqua, zirconia ceramic sleeve	5F100-3AC
[I]	6-Pack Duplex SC MM (12-fiber), beige, phosphor bronze sleeve	5F100-6BC
[J]	6-Pack Duplex SC MM Laser Optimized (12-fiber), aqua, zirconia ceramic sleeve	5F100-6AC
[K]	6-Pack Duplex SC SM (12-fiber), blue, zirconia ceramic sleeve	5F100-6ZC
[L]	6-Pack Duplex SC/APC SM (12-fiber), green, zirconia ceramic sleeve	5F100-6CA
[M]	6-Pack Duplex LC MM (12-fiber), beige, phosphor bronze sleeve	5F100-12P
[N]	6-Pack Duplex LC SM (12-fiber), blue, zirconia ceramic sleeve	5F100-12Z
[O]	6-Pack Duplex LC/APC SM (12-fiber), green, zirconia ceramic sleeve	5F100-12V
[P]	6-Pack Duplex LC MM Laser Optimized (12-fiber), aqua, zirconia ceramic sleeve	5F100-12A
	8-Pack LC MM (16-fiber), beige, phosphor bronze sleeve	5F100-16P
[Q]	8-Pack LC MM (16-fiber), aqua, zirconia ceramic sleeve	5F100-16A
	8-Pack LC SM (16-fiber), blue, zirconia ceramic sleeve	5F100-16Z
[R]	6-Pack Quad LC MM (24-fiber), beige, phosphor bronze sleeve	5F100-24P
[S]	6-Pack Quad LC SM (24-fiber), blue, zirconia ceramic sleeve	5F100-24Z
[T]	6-Pack Quad LC MM Laser Optimized (24-fiber), aqua, zirconia ceramic sleeve	5F100-24A
[U]	6-Pack MTP® (72-fiber), Method A and C (Key up/Key down)	5F100-6MP
	6-Pack MTP (72-fiber), Method B (Key up/Key up)	5F100-6MB
	8-Pack MTP (96-fiber), Method A and C (Key up/Key down)	5F100-8MP
	8-Pack MTP (96-fiber), Method B (Key up/Key up)	5F100-8MB
[V]	Blank Plate, plastic	5F100-BPP
	Blank Plate, metal	5F100-BLK
[W]	6-Pack, QuickPort®, empty	5F100-6QP

Additional adapter plate configurations available. Please contact inside sales at 800.722.2082 for more information.

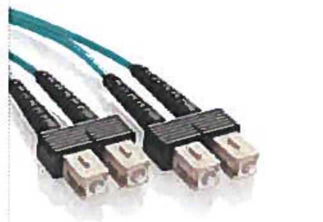
FIBER
enclosure accessories

OPT-X ENCLOSURE DENSITY

WALL-MOUNT ENCLOSURES		
Small	**Medium**	**Large**
Holds up to 2 adapter plates	*Holds up to 4 adapter plates*	*Holds up to 12 adapter plates*
6-pk ST = up to 12 fibers	6-pk ST = up to 24 fibers	6-pk ST = up to 72 fibers
8-pk ST = up to 16 fibers	8-pk ST = up to 32 fibers	8-pk ST = up to 96 fibers
3-pk Dplx SC = up to 12 fibers	3-pk Dplx SC = up to 24 fibers	3-pk Dplx SC = up to 72 fibers
6-pk Dplx SC = up to 24 fibers	6-pk Dplx SC = up to 48 fibers	6-pk Dplx SC = up to 144 fibers
6-pk Dplx LC = up to 24 fibers	6-pk Dplx LC = up to 48 fibers	6-pk Dplx LC = up to 144 fibers
6-pk Quad LC = up to 48 fibers	6-pk Quad LC = up to 96 fibers	6-pk Quad LC = up to 288 fibers

LC-LC Duplex
62.5/125 µm MM

ST-SC Duplex
62.5/125 µm LOMM



SC-SC Duplex
50/125 µm LOMM

LC-SC Duplex
50/125 µm LOMM

MULTIMODE PATCH CORDS

- Available in standard SC, ST, LC, or hybrid options in lengths of 1, 2, 3, 5, or 10 meters
- Riser-rated simplex or duplex zip-cord multimode cable
- Standard 50/125 µm and 62.5/125 µm in orange jacket cable
- < 0.4 dB insertion loss, > 25 dB back reflection

LASER OPTIMIZED PATCH CORDS

- 50/125 µm laser optimized multimode cable (aqua jacket)
- Reverse polarity configuration
- < 0.4 dB insertion loss, > 25 dB back reflection

PART NUMBER CONFIGURATOR – CUSTOM FIBER OPTIC PATCH CORDS & PIGTAILS

Example: **62DST-M15**; Fiber Patch Cord, 62.5/125 µm (OM1) duplex riser-rated cable, ST to ST, 15 meter length.

FOR ASSISTANCE CONFIGURING YOUR CABLE ASSEMBLY, PLEASE CALL 800.722.2082.

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XX X XX - XXX

CORE STYLE/POLISH TYPE
Multimode Core
50 = 50/125 µm (OM2)
62 = 62.5/125 µm (OM1)
5L = 50/125 µm laser optimized (10G-300 m) (OM3)
54 = 50/125 µm laser optimized (10G-550 m) (OM4)
Single-Mode Core
UP = UPC Polish (ultra physical contact)
AP = APC Polish (angle physical contact)

For lengths greater than 99 meters, call inside sales for part number.

CABLE TYPE
S = Simplex (riser)
D = Duplex (riser)
W = Simplex (plenum)
Y = Duplex (plenum)
P = Pigtail

CONNECTOR COMBINATIONS	
Standard & Pigtail	**Hybrid**
ST = ST to ST	CT = SC to ST
SC = SC to SC	CL = SC to LC
LC = LC to LC	TL = ST to LC

CABLE LENGTH
For feet, enter length as three characters Example: 8 ft = 008
For meters enter M then the length as two characters Example: 4 m = M04

62.5/125 µm MULTIMODE (OM1)

DESCRIPTION	LENGTH (METERS)	DUPLEX	SIMPLEX
SC-SC	1	62DSC-M01	62SSC-M01
SC-SC	2	62DSC-M02	62SSC-M02
SC-SC	3	62DSC-M03	62SSC-M03
SC-SC	5	62DSC-M05	62SSC-M05
SC-SC	10	62DSC-M10	62SSC-M10
ST-ST	1	62DST-M01	62SST-M01
ST-ST	2	62DST-M02	62SST-M02
ST-ST	3	62DST-M03	62SST-M03
ST-ST	5	62DST-M05	62SST-M05
ST-ST	10	62DST-M10	62SST-M10
LC-LC	1	62DLC-M01	62SLC-M01
LC-LC	2	62DLC-M02	62SLC-M02
LC-LC	3	62DLC-M03	62SLC-M03
LC-LC	5	62DLC-M05	62SLC-M05
LC-LC	10	62DLC-M10	62SLC-M10
SC-ST	1	62DCT-M01	62SCT-M01
SC-ST	2	62DCT-M02	62SCT-M02
SC-ST	3	62DCT-M03	62SCT-M03
SC-ST	5	62DCT-M05	62SCT-M05
SC-ST	10	62DCT-M10	62SCT-M10
SC-LC	1	62DCL-M01	62SCL-M01
SC-LC	2	62DCL-M02	62SCL-M02
SC-LC	3	62DCL-M03	62SCL-M03
SC-LC	5	62DCL-M05	62SCL-M05
SC-LC	10	62DCL-M10	62SCL-M10

50/125 µm MULTIMODE (OM2)

DESCRIPTION	LENGTH (METERS)	DUPLEX	SIMPLEX
SC-SC	1	50DSC-M01	50SSC-M01
SC-SC	2	50DSC-M02	50SSC-M02
SC-SC	3	50DSC-M03	50SSC-M03
SC-SC	5	50DSC-M05	50SSC-M05
SC-SC	10	50DSC-M10	50SSC-M10
ST-ST	1	50DST-M01	50SST-M01
ST-ST	2	50DST-M02	50SST-M02
ST-ST	3	50DST-M03	50SST-M03
ST-ST	5	50DST-M05	50SST-M05
ST-ST	10	50DST-M10	50SST-M10
LC-LC	1	50DLC-M01	50SLC-M01
LC-LC	2	50DLC-M02	50SLC-M02
LC-LC	3	50DLC-M03	50SLC-M03
LC-LC	5	50DLC-M05	50SLC-M05
LC-LC	10	50DLC-M10	50SLC-M10

50/125 µm LASER OPTIMIZED MULTIMODE (OM3)

DESCRIPTION	LENGTH (METERS)	DUPLEX
SC-SC	1	5LDSC-M01
SC-SC	2	5LDSC-M02
SC-SC	3	5LDSC-M03
SC-SC	5	5LDSC-M05
SC-SC	10	5LDSC-M10
LC-LC	1	5LDLC-M01
LC-LC	2	5LDLC-M02
LC-LC	3	5LDLC-M03
LC-LC	5	5LDLC-M05
LC-LC	10	5LDLC-M10
SC-LC	1	5LDCL-M01
SC-LC	2	5LDCL-M02
SC-LC	3	5LDCL-M03
SC-LC	5	5LDCL-M05
SC-LC	10	5LDCL-M10

FASTCAM CONNECTORS

- Pre-polished, field-installable connectors
- Designed for data center and other applications that require fast network deployment
- Use precision zirconia ferrules
- Require no polishing or epoxy curing; provide immediate termination
- Precision mechanical termination uses molded v-groove technology to retain and align the fiber
- Terminated on 250 µm or 900 µm buffered fiber and/or 2 or 3 mm jacketed fiber
- Available in multimode, laser optimized multimode, and single-mode connector styles
- Higher yields with Visual Fault Locator (VFL) compatible LC, SC, and ST connectors

FastCAM Components

FASTCAM CONNECTORS – 1 PER BAG

DESCRIPTION	PART NO.
[A] FastCAM SC Single-Mode Connector, blue	49991-SSC
[B] FastCAM SC 50/125 µm Laser Optimized Multimode Connector, aqua	49991-LSC
[C] FastCAM SC 62.5/125 µm Multimode Connector, beige	49991-MSC
[D] FastCAM SC 50/125 µm Multimode Connector, black	49991-5SC
[E] FastCAM ST 50/125 µm Multimode Connector, black	49991-5ST
[F] FastCAM ST Single-Mode Connector, blue	49991-SST
[G] FastCAM ST 62.5/125 µm Multimode Connector, beige	49991-MST
[H] FastCAM LC Single-Mode Connector, blue	49991-SLC
[I] FastCAM LC 50/125 µm Laser Optimized Multimode Connector, aqua	49991-LLC
[J] FastCAM LC 62.5/125 µm Multimode Connector, beige	49991-MLC
[K] FastCAM LC 50/125 µm Multimode Connector, black	49991-5LC

See pages B67-B72 for FastCAM tools and consumables.

SPOTLIGHT Visual Fault Locator (VFL)

Quickly diagnose and repair optical fiber damage with Leviton's new Visual Fault Locator (VFL). The pocket-sized tool uses a bright red laser to locate faults including tight bends, breaks, and defective connectors. Included with each VFL are a 2.5 mm ferrule interface, 1.25 mm adapter, and soft carrying case. Use with LC, SC and ST FastCAM connectors.

A
40" length shown

B
40" length shown

C

D

CABLE MGMT

versi-duct

VERSI-DUCT CABLE MANAGEMENT SYSTEM

Leviton's unique Versi-Duct system is a versatile cable management solution for copper and fiber installations. The innovative system fits on any standard equipment rack, and accessories enable a wide range of cable management configurations.

VERSI-DUCT 8" CHANNEL CABLE MANAGEMENT

- Ideal for today's large-scale deployments and CAT 6A installations with typical larger diameter cable
- 80" channel ships in two 40" pieces for easier handling and installation
- Channels available with standard or designer cover
- Channels include cover, slack loop organizers, cable retainers, and mounting brackets
- Included cover features unique integrated dual-hinge for easy accessibility
- Channels can be side or center-mounted for better space utilization
- Large finger passthrough space aligns with rack units

VERSI-DUCT 8" CHANNEL VERTICAL CABLE MANAGEMENT & ACCESSORIES

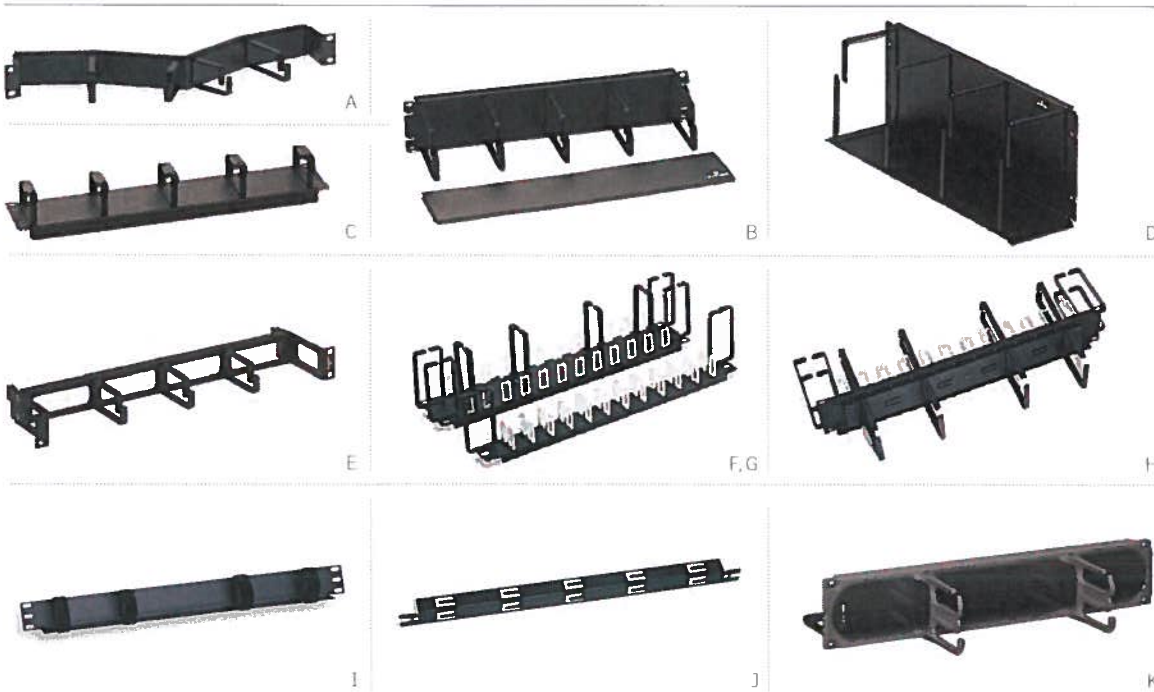
DESCRIPTION		FRONT ONLY		FRONT & REAR
Vertical 80" length, 8" W x 8" D channel, standard hinged black cover		8980L-VFO		8980L-VFR
Vertical 80" length, 8" W x 8" D channel, designer hinged grey cover	[A]	8C80L-VFO	[B]	8C80L-VFR
Vertical Center Mounting Bracket, 8" channel (bag of 4)				89265-BKT
Vertical Cable Retainer, 8" channel (bag of 6)			[C]	89265-WR1
Vertical Slack Loop Organizer, 8" channel (package of 2)			[D]	89265-SL1

8" VERSI-DUCT CAPACITY CHART

Use the chart below to determine maximum recommended cable capacity for 8" Versi-Duct managers, based on average cable outside diameter. To ensure proper bend radius and space for future additions, do not fill to capacity at initial installation.

Feature	Channel Depth (WxD)	Usable Area (In^2)	CAT 6A Capacity (.330" Cable)	CAT 6 Capacity (.230" Cable)	CAT 5e Capacity (.185" Cable)
8" Channel Size	8" x 8"	56	186	384	596
Finger Spacing	5.5" x 1"	5.5	24	60	114
Large Passthrough	4.8" x 2.6"	12.7	72	120	258
Small Passthrough	2.6" x 2.6"	6.8	36	72	138

B
80" length shown

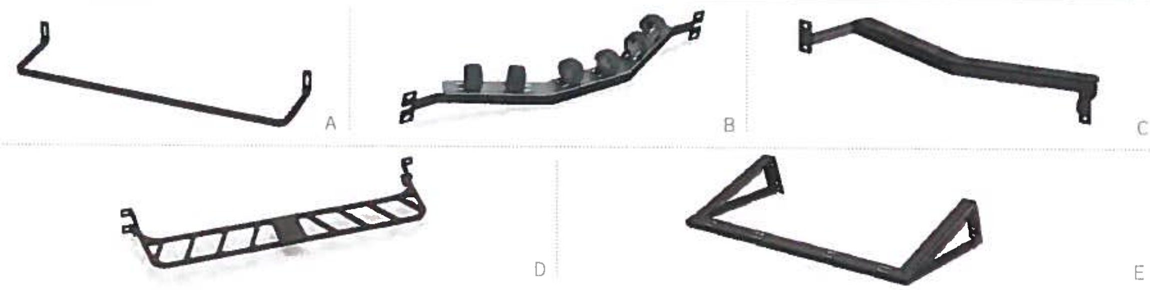


HORIZONTAL CABLE MANAGERS

- Available in 1RU, 2RU, and 4RU sizes
- All mount to standard 19" racks and cabinets
- 4RU manager includes a shelf to support patch cords
- Horizontal managers support transition to vertical management
- Combo Manager offers front and rear management
- Attach included cable manager to C1 Ultra blank panel for high-density installations

HORIZONTAL CABLE MANAGERS

DESCRIPTION	FLAT	FLAT W/ METAL COVER	ANGLED	RECESSED-ANGLED	RECESSED-FLAT
Horizontal Manager, 1RU, 4" metal rings	49253-LPM	4925C-LPM	49254-LPM	[A] 4W254-LPM	
Horizontal Manager, 2RU, 4" metal rings	49253-BCM	[B] 4925C-BCM	49254-BCM	4W254-BCM	
Horizontal Manager, 2RU, 2" metal rings	[C] 49253-2CM				
Horizontal Manager, 4RU, 4" metal rings	[D] 49253-4CM	4925C-4CM			
Horizontal Manager, 1RU, 6" metal rings	49253-6PM				
Horizontal Manager, 2RU, 6" metal rings	49253-6MR				
Horizontal Manager, 4RU, 6" metal rings	49253-6CM	4925C-6CM			
Recessed Horizontal Manager, 1RU, 3" metal rings					[E] 49253-RCM
Horizontal Manager, 2RU, w/ plastic saddles	[F] 49252-P02				
Horizontal Manager, 1RU, w/ plastic saddles	[G] 49252-P01				
Combo Front and Rear Manager, 2RU	[H] 49252-PCM				
VELCRO® Brand Horizontal Manager, 1RU	[I] 41150-019				
Tie Wrap Bar, 1" H x 1.5" D	[J] 49258-TWB				
C1 Ultra Blank Panel / Cable Manager, 2RU	[K] C1253-2CM				



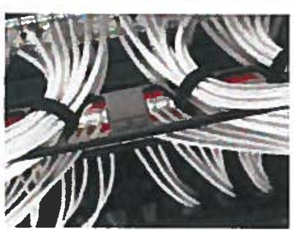
REAR CABLE MANAGEMENT BARS

- Standard Flat Cable Management Bar attaches directly to patch panels
- Standard Angled and Recessed-Angled Cable Management Bars attach directly to rack
- Extended Cable Management Bar handles large cable volumes and includes six VELCRO® Brand straps
- High-density Cable Management Bar is constructed of die-cast aluminum to support heavy loads of cable and mounts on front or rear of panel
- Rear Cable Management Bar for Active Equipment offers extended depth for power cord support and cutouts for air circulation

REAR CABLE MANAGEMENT BARS

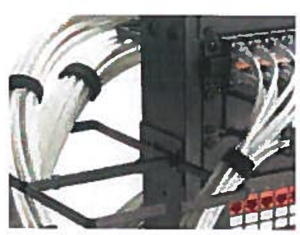
DESCRIPTION	FLAT	ANGLED	RECESSED-ANGLED
Standard Cable Management Bar	[A] 49005-CMB	[B] 49006-AMB	[C] 4W006-AMB
High-Density Cable Management Bar, 1RU	[D] 49005-DMB		
Rear Cable Manager for Active Equipment, 2RU	[E] 41188-SM2		

SPOTLIGHT Cable Management Options



High-Density Cable Management Bar

Constructed of durable, lightweight die-cast aluminum, the High-Density 1RU Cable Management Bar is excellent for heavy cable loads. The bar supports up to 48 Cat 6A, CAT 6, or CAT 5e horizontal cables and fits all industry standard 19" racks and cabinets. It can be mounted on the front or rear of the rack.



Vertical Cable Management Rings

Support and manage vertical and horizontal cable loads with Vertical Cable Management Rings (shown on page C8). The open ring solution is ideal for tight spaces and smaller deployments. Install with the Tie Bracket (shown on page C8) for center mounting.

A

B

C-E

Leviton's P1000 Series Rack PDUs are designed for data centers, wiring closets, and other environments that require cost-effective, "always on" power. The robust, compact design ensures that these products can be used wherever reliability and density are important.

P1000 SERIES

- All models feature circuit breaker protection to prevent current overloads
- Available in 120V or 208V versions with 15, 20, or 30 amps
- 208V PDUs come with 2-pole circuit breakers for added safety
- Surge-protected models prevent damage from transient surges
- LED indicators for power, grounding/polarity, and surge protection where applicable
- Hardwired power input cord
- 18-gauge cold-rolled steel construction
- Available in vertical Zero-U or horizontal 19" rack-mount styles
- Mounting hardware included. Optional adjustable rack-mounting bracket available

Vertical P1000 units ship with flat brackets, L-brackets, backplates, mounting buttons, screws, and washers to support a variety of workstation options

STANDARDS & CERTIFICATIONS

UL 60950-1 LISTED | #E228302
UL 1449 LISTED 3RD ED. | #E228302
(P1070 SERIES ONLY)

RECOMMENDED APPLICATIONS:

Data Center Cabinets

Telecommunications Racks

SPOTLIGHT PDU Adjustable Extension Brackets

Mount Leviton Vertical PDUs in open-frame racks with adjustable PDU Extension Brackets to make room for cable management and other hardware. Robust 14-gauge construction ensures ample support for the PDU and attached power cords. The PDU Extension Bracket (PDURK-BKT) works with all Leviton vertical PDUs including FLX, Switched, Metered, and P1000 Series. See ordering information on page D5.

UNMETERED HORIZONTAL POWER DISTRIBUTION UNITS (PDUs), SINGLE-INPUT								
PART NO.	INPUT				OUTPUT			DIMENSIONS
	VOLTAGE	AMPS	CORD LENGTH	PLUG TYPE	VOLTAGE	RECEPTACLE TYPE	RECEPTACLE QUANTITY	
P1020-12S	120V	15A	12'	5-15P	120V	5-15R	10	1.75" H x 17.5" W x 4.5" D
[A] P1021-12S	120V	20A	12'	5-20P	120V	5-20R	10	1.75" H x 17.5" W x 4.5" D
P1022-12L	120V	20A	12'	L5-20P	120V	5-20R	10	1.75" H x 17.5" W x 4.5" D
P1023-12L	120V	30A	12'	L5-30P	120V	5-20R	16	3.5" H x 17.5" W x 4.5" D
[B] P1024-12L	208V	20A	12'	L6-20P	208V	C13	12	1.75" H x 17.5" W x 4.5" D
P1025-12L	208V	30A	12'	L6-30P	208V	C13	16	3.5" H x 17.5" W x 4.5" D

UNMETERED VERTICAL POWER DISTRIBUTION UNITS (PDUs), SINGLE-INPUT								
PART NO.	INPUT				OUTPUT			DIMENSIONS
	VOLTAGE	AMPS	CORD LENGTH	PLUG TYPE	VOLTAGE	RECEPTACLE TYPE	RECEPTACLE QUANTITY	
P1040-10S	120V	15A	10'	5-15P	120V	5-15R	16	30" L x 1.8" W x 1.75" D
[C] P1041-10S	120V	20A	10'	5-20P	120V	5-20R	16	30" L x 1.8" W x 1.75" D
P1042-10L	120V	20A	10'	L5-20P	120V	5-20R	16	30" L x 1.8" W x 1.75" D
P1043-10S	120V	20A	10'	5-20P	120V	5-20R	24	48" L x 1.8" W x 1.75" D
[D] P1044-10L	120V	20A	10'	L5-20P	120V	5-20R	24	48" L x 1.8" W x 1.75" D
P1045-10L	120V	30A	10'	L5-30P	120V	5-20R	24	48" L x 1.8" W x 1.75" D
P1046-10L	208V	20A	10'	L6-20P	208V	C13	24	48" L x 2.19" W x 2" D
[E] P1047-10L	208V	30A	10'	L6-30P	208V	C13	24	48" L x 2.19" W x 2" D

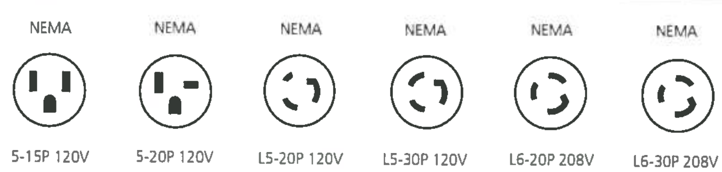
SURGE PROTECTED VERTICAL POWER DISTRIBUTION UNITS (PDUs), SINGLE-INPUT								
PART NO.	INPUT				OUTPUT			DIMENSIONS
	VOLTAGE	AMPS	CORD LENGTH	PLUG TYPE	VOLTAGE	RECEPTACLE TYPE	RECEPTACLE QUANTITY	
P1070-10S	120V	15A	10'	5-15P	120V	5-15R	16	30" L x 2.19" W x 1.73" D
P1071-10S	120V	20A	10'	5-20P	120V	5-20R	16	30" L x 2.19" W x 1.73" D
P1072-10L	120V	20A	10'	L5-20P	120V	5-20R	16	30" L x 2.19" W x 1.73" D
P1073-10S	120V	20A	10'	5-20P	120V	5-20R	24	48" L x 2.19" W x 1.73" D
P1074-10L	120V	20A	10'	L5-20P	120V	5-20R	24	48" L x 2.19" W x 1.73" D

All P1000 Series PDUs have hardwired cords.

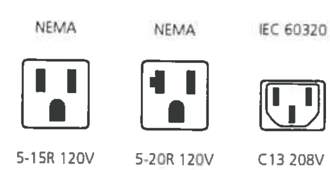
POWER

power distribution

INPUT PLUG TYPES

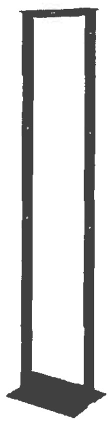


OUTPUT RECEPTACLE TYPES



Create a Cable Management Solution with CPI Rack Systems

1 Step One : Choose your two or four-post Rack System



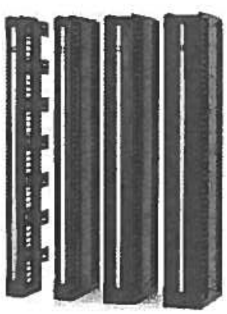
- >> Standard Rack
- >> Universal Rack
- >> Standard Rack 6"D (150 mm)

- >> Seismic Frame® Two-Post Rack (for Evolution™ and MCS-EFX only)

- >> QuadraRack™ 4-Post and Server Frame
- >> Adjustable Depth QuadraRack™/ServerRack

- >> Adjustable Rail QuadraRack™/ServerRack

2 Step Two : Choose your cabling section



>> Evolution Vertical Cable Manager
CPI's largest, most feature rich vertical cable manager. The stylish front door has a curved design and aluminum center feature to match CPI's TeraFrame® Family of Cabinets.

- Two-point latch with a single knob, opens to the right or left and can be removed when cabling
- Door attaches at the top and bottom and does not limit the amount of cable entering/exiting and rack-mount unit
- Large cable openings align with each rack-mount unit space
- Movable Mid-Sections on double-sided versions allow a 50/50, 60/40 or 40/60 split of interior space versions in several sizes.

New!

>> Velocity Cable Manager
Offers an easy to install, easy to transport and economical solution with more cable capacity and simplified cable management.

- Snap-together plastic manager delivers unassembled in a compact package
- T-shaped cable guides with rounded edges organize cables by rack-mount unit and protect against snags
- Openings on the sides of the managers align with each rack-mount unit, simplifying cable management
- Openings on the back of the managers provide easy front-to-rear cabling
- Snap-on covers supply a secure and protected environment
- Available in single and double-sided versions in several sizes

Patented

>> MCS Master Cabling Section
Provides patented plastic T-shaped cable management fingers and openings that align with each rack-mount unit on the rack

- Sturdy door/cover includes a handle and mechanical latch that keeps the door in the closed position
- T-shaped cable guides organize cables by rack-mount unit
- Edge-protected cable pass-through ports allow front-to-rear cabling
- Extended finger versions support high cable capacity
- Available in single and double-sided versions in several sizes

>> VCS Vertical Cabling Section
An open cable trough with easy-to-use, flip-open latches for organizing large cable bundles.

- Open design supports large cable bundles
- Flip-open latches provide easy access to cables
- Edge protected openings prevent cable snags
- Available in single and double-sided versions in several sizes
- Double-sided versions have edge-protected pass-through ports
- Covers and snap-on Finger Snap Cable Guides are available as accessories

>> CCS Combination Cabling Section
A double-sided alternative that combines an MCS-style front with a VCS-style rear.

- Plastic T-shaped cable guides on the front of the manager allow cables to exit into each rack-mount unit on the rack
- Hinged door swings open to the right or left, secures with top and bottom latches
- Open design on the rear of the manager supports large cable bundles
- Flip-open latches provide easy access to cables
- Edge protected openings prevent cable snags
- Available in several sizes
- Compatible with VCS accessories

The following charts provide part numbers for the systems you've seen presented in this brochure; however, additional part numbers (sizes) and configured systems may be available.

For assistance selecting a cable management solution, check out the Product Configurator at www.chatsworth.com/configurator. If you require personal assistance, contact Technical Support at 800-834-4969.

Build Your Own: Rack Systems (as shown on Pages 6 & 7)

Rack Systems	
Part Number	**Description H x W Height - ft (m)**
55053-703	3" Deep Standard Rack, 7 (2.1) x 19", 45U
66353-703	6" Deep Standard Rack, 7 (2.1) x 19", 45U
66383-703	6" Deep Standard Rack, 7 (2.1) x 23", 45U
48353-703	Universal Rack, 7 (2.1) x 19", 45U
48383-703	Universal Rack, 7 (2.1) x 3", 45U
13854-703	Seismic Frame Two-Post Rack, 7 (2.1) x 19", 44U
QuadraRack™	
Part Number	**Description H x W x D Height - ft (m), Depth - in (mm)**
50120-703	QuadraRack 4-Post Frame 7 (2.1) x 19 x 29 (740), 45U
15217-703	Adjustable QuadraRack 7 (2.1) x 19 x 29.5 to 35.4 (750-900)
15254-703	Adjustable Rail QuadraRack 7 (2.1) x 19 x 35.4 (90)

Evolution™ Vertical Cable Management	
Part Number	**Description 7'H (2.1 m) W x D - in (mm)**
35511-703	Evolution g1 Single-Sided, 6 x 13.2 (150 x 335)
35512-703	Evolution g1 Single-Sided, 8 x 13.2 (200 x 335)
35513-703	Evolution g1 Single-Sided, 10 x 13.2 (250 x 335)
35514-703	Evolution g1 Single-Sided, 12 x 13.2 (300 x 335)
35515-703	Evolution g1 Single-Sided, 15 x 13.2 (380 x 335)
35521-703	Evolution g2 Double-Sided, 6 x 24.5 (150 x 622)
35522-703	Evolution g2 Double-Sided, 8 x 24.5 (200 x 622)
35523-703	Evolution g2 Double-Sided, 10 x 24.5 (250 x 622)
35524-703	Evolution g2 Double-Sided, 12 x 24.5 (300 x 622),
35525-703	Evolution g2 Double-Sided, 15 x 24.5 (380 x 622)
35571-703	Evolution g3 Combination, 6 x 20.2 (150 x 513)
35572-703	Evolution g3 Combination, 8 x 20.2 (200 x 513) New!
35573-703	Evolution g3 Combination, 10 x 20.2 (250 x 513)
35574-703	Evolution g3 Combination, 12 x 20.2 (300 x 513)
35575-703	Evolution g3 Combination, 15 x 20.2 (380 x 513)
Evolution™ Single-Sided Horizontal Cable Manager	
35441-701	Evolution Single-Sided, 1U x 19 x 8.2 (208)
35441-702	Evolution Single-Sided, 2U x 19 x 8.2 (208)
35441-703	Evolution Single-Sided, 3U x 19 x 8.2 (208)

Build Your Own: Rack Systems (as shown on Pages 6 & 7)

Velocity Vertical Cable Managers New!	
Part Number	**Description H x W Height - ft (m)**
For 7'H (2.1 m), 45U Racks	
13901-703	Velocity Single-Sided, 80.5 x 3.6 x 9.7 (2045 x 91 x 246)
13902-703	Velocity Single-Sided, 80.5 x 6 x 9.8 (2045 x 152 x 249)
13904-703	Velocity Single-Sided, 80.5 x 10 x 10.3 (2045 x 254 x 262)
13905-703	Velocity Single-Sided, 80.5 x 12 x 10.4 (2045 x 305 x 264)
13911-703	Velocity Double-Sided, 80.5 x 3.6 x 16.4 (2045 x 91 x 417)
13912-703	Velocity Double-Sided, 80.5 x 6 x 16.6 (2045 x 152 x 422)
13914-703	Velocity Double-Sided, 80.5 x 10 x 17.5 (2045 x 254 x 445)
13915-703	Velocity Double-Sided, 80.5 x 12 x 17.8 (2045 x 305 x 446)
Velocity Horizontal Cable Managers	
Part Number	**Description H x W x D Height - ft (m)**
13930-701	Velocity Single-Sided, 1U x 19 x 5.9 (150)
13930-702	Velocity Single-Sided, 2U x 19 x 5.9 (150)
13930-703	Velocity Single-Sided, 3U x 19 x 5.9 (150)

Velocity Standard Pack New!	
Part Number	**Description H x W x D Height - ft (m)**
Rack, Cable Management & Hardware Package	
57011-703	(1) Standard Rack, 7 (2.1) x 19", 45U (1) Velocity Single-Sided, 80.5 x 3.6 x 9.7 (2045 x 91 x 246) (1) Rack Installation Kit for concrete floor, 1/2" hardware
57012-703	(1) Standard Rack, 7 (2.1) x 19", 45U (1) Velocity Double-Sided, 80.5 x 3.6 x 16.4 (2045 x 91 x 417) (1) Rack Installation Kit for concrete floor, 1/2" hardware, Zinc
57013-703	(1) Standard Rack, 7 (2.1) x 19", 45U (1) Velocity Single-Sided, 80.5 x 6 x 9.8 (2045 x 152 x 249) (1) Rack Installation Kit for concrete floor, 1/2" hardware, Zinc
57014-703	(1) Standard Rack, 7 (2.1) x 19", 45U (1) Velocity Double-Sided, 80.5 x 6 x 16.6 (2045 x 152 x 422) (1) Rack Installation Kit for concrete floor, 1/2" hardware, Zinc

MCS Master Cabling Section	
Part Number	**Description H x W x D Height - ft (m), Depth - in (mm)**
30091-703	MCS, Single-Sided, 7 x 4.4 x 8.08 (2.1 x I12 x 205)
30092-703	MCS, Single-Sided, 7 x 6 x 8.08 (2.1 x 150 x 205)
30093-703	MCS, Single-Sided, 7 x 10 x 8.08 (2.1 x 250 x 205)
30094-703	MCS, Double-Sided, 7 x 4.4 x 16.15 (2.1 x 112 x 410)
30095-703	MCS, Double-Sided, 7 x 6 x 16.15 (2.1 x 150 x 410(
30096-703	MCS, Double-Sided, 7 x 10 x 16.15 (2.1 x 250 x 410)
MCS-EFX Master Cabling Section with Extended Fingers	
40092-703	MCS-EFX, Single-Sided, 7 x 6 x 10.62 (2.1 x 150 x 269)
40093-703	MCS-EFX, Single-Sided, 7 x 10 x 10.62 (2.1 x 250 x 269)
40094-703	MCS-EFX, Single-Sided, 7 x 12 x 10.62 (2.1 x 300 x 269)
40095-703	MCS-EFX, Double-Sided, 7 x 6 x 21.23 (2.1 x 150 x 539(
40096-703	MCS-EFX, Double-Sided, 7 x 10 x 21.23 (2.1 x 250 x 539)
40097-703	MCS-EFX, Double-Sided, 7 x 12 x 21.23 (2.1 x 300 x 539)
VCS Vertical Cabling Section	
11730-703	VCS, Single-Sided, 7 x 3.65 x 6.38 (2.1 x 92 x 162(
11374-703	VCS, Single-Sided, 7 x 6 x 6.38 (2.1 x 150 x 162)
12096-703	VCS, Double-Sided, 7 x 3.65 x 12.75 (2.1 x 92 x 323)
11729-703	VCS, Double-Sided, 7 x 6 x 12.75 (2.1 x 150 x 323)

EasySwing™ WALL-MOUNT RACK

KEY FEATURES

- Swing-out rack-mount frame provides easy access to the rear of installed equipment.
- Fiber and copper ready with 19" EIA threaded equipment mounting rails.
- Easy to ship, inventory and install — ships flat, folds open to mount on the wall.
- Integrated cable management straps included.
- Swing gate can open to the right or to the left.
- Durable, all-steel construction.

APPLICATIONS

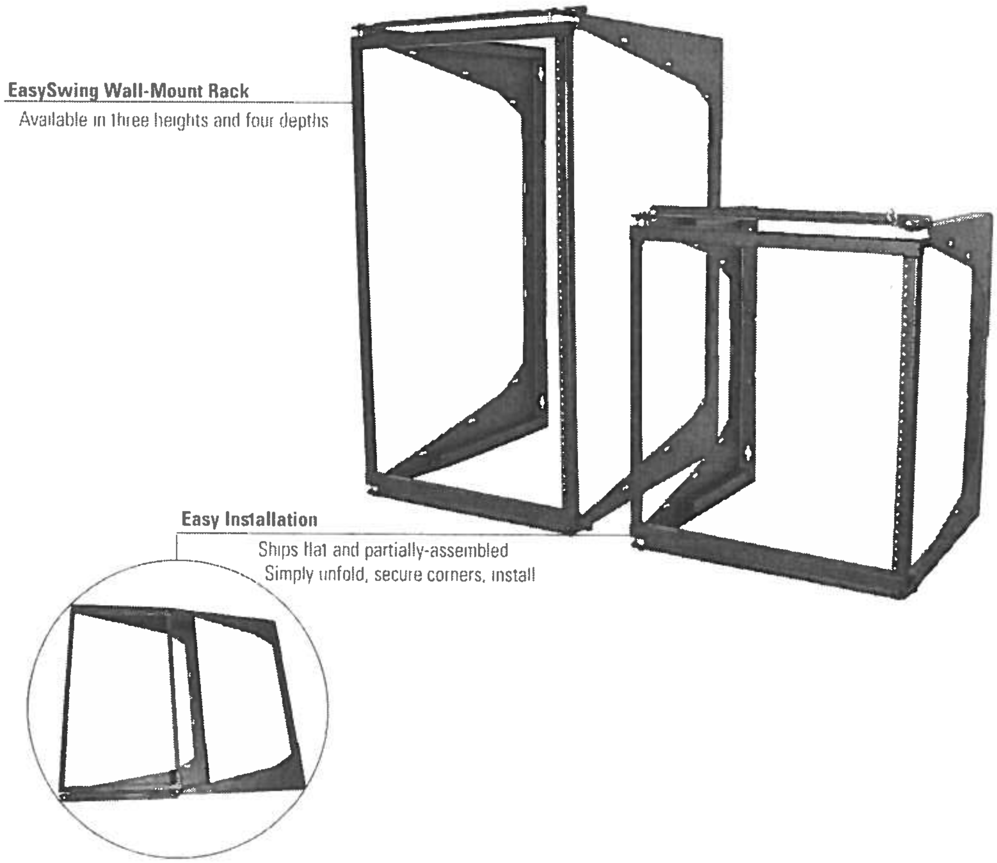
- Store and secure network, communications and security equipment within a secure telecommunications or equipment room.
- Networking equipment, security equipment, switches, routers, telephone/voicemail, patch panels or other interconnect equipment.

USE WITH

- Combination Pan Head, Pilot Point Mounting Screws
- Hex Lag Screws and Flat Washers

RELATED ACCESSORIES

- Saf-T-Grip® Cable Management Straps
- Cable management accessories
- Rack-mount power strips
- Rack shelves



EasySwing™ Wall-Mount Racks are a family of open wall-mounted 19" EIA swing gate racks available in three heights and four depths. EasySwing Wall-Mount Racks are copper and fiber ready, are easy to install, and provide easy access to the front and rear of equipment. Use EasySwing Wall-Mount Racks to store network, communications and security equipment in telecommunication and equipment rooms or in other rooms where floor space is limited.

EasySwing Wall-Mount Rack ships flat and partially assembled. Assembly is easy — unfold the rack and install one assembly bolt per corner. The frame is punched with keyhole mounting slots located on 18.5" centers. Attach the rack to the wall with 1/4" installation hardware (order separately) EasySwing can swing open to the right or left, simply flip the rack over before securing it to the wall.

EasySwing Wall-Mount Rack supports 19" EIA rack-mount equipment and single-sided shelves. Equipment mounts on a hinged gate. The gate has single-sided rack-mount rails with roll-formed #12-24 threads for attaching equipment. The gate swings open to provide easy access to the rear of equipment during service work. The gate is secured in the closed position with a removable pin that latches through the wall-mount frame.

EasySwing Wall-Mount Rack will support 85 pounds of equipment. Premise cables are guided from the wall to the swing gate with included reusable cable management straps. The straps attach to slots in the frame and support cables as the gate opens and closes. Add other CPI accessories to customize your installation.

See reverse for product selection. Contact CPI for configuration assistance.

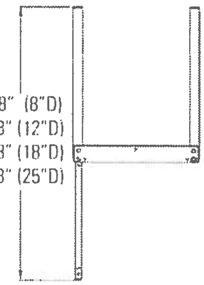
CHATSWORTH PRODUCTS, INC.

800-834-4969
techsupport@chatsworth.com
www.chatsworth.com

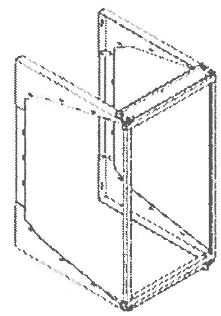
SPECIFICATIONS

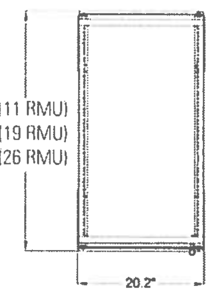
- Open wall-mount rack with swing-out rear access to equipment
- For indoor use only, in environmentally controlled areas; may not be used outdoors, in industrial or harsh environments, or in plenum-spaces
- Swing gate is hinged on one side only, wall-mount frame may be installed so that the gate will open to the right or left
- Includes locking latch pin to secure the gate in the closed position
- Available sizes:
  Heights: 24.5", 38.5", 51.5"
  Widths: 20.2"
  Depths: 8", 12", 18", 25"
- Usable rack-mount space:
  Heights: 11 RMU, 19 RMU, 26 RMU
  Widths: 19"EIA rack-mount
  Depths: 6.5", 10.5", 16.5", 23.5"
  -Depth limited for swing arc
- Cable management:
  Includes (5) 19"L x 1"W reusable cable management straps
  Slotted attachment points on frame
- Equipment support:
  1 pair L-shaped equipment mounting rails
  - 19"W, EIA-310-D compliant
  - Universal hole pattern, 5/8"-5/8"-1/2" vertical hole spacing
  - Roll-formed #12-24 equipment mounting holes
  Includes 12 each #12-24 black equipment mounting screws
- Load capacity:
  85 pounds of equipment, open or closed
- Certifications:
  EIA-310-D compliant
- Material:
  Rack: sheet and tubular steel
  Cable management straps: fire-retardant black nylon
- Construction:
  Welded and bolted, ships partially-assembled
- Finish:
  Epoxy-polyester hybrid powder coat paint
  Available in black, gray or computer white

DIMENSIONS

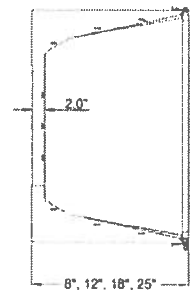


Top View
(Gate Open)





Front View
(Gate Closed)



Side View
(Gate Open)

ORDERING INFORMATION

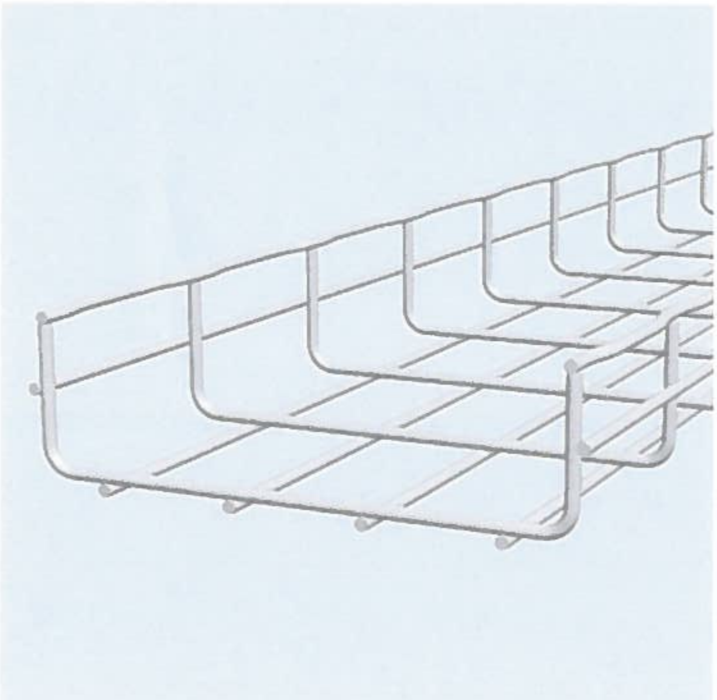
EasySwing Wall-Mount Rack						
Part Number & Color			Height	RMU	Depth	Shipping Weight
Gray	White	Black				
13602-108	13602-208	13602-708	24.5"	11	8"	22 lb
13602-112	13602-212	13602-712	24.5"	11	12"	24 lb
13602-118	13602-218	13602-718	24.5"	11	18"	28 lb
13602-125	13602-225	13602-725	24.5"	11	25"	34 lb
13604-108	13604-208	13604-708	38.5"	19	8"	27 lb
13604-112	13604-212	13604-712	38.5"	19	12"	29 lb
13604-118	13604-218	13604-718	38.5"	19	18"	33 lb
13604-125	13604-225	13604-725	38.5"	19	25"	38 lb
13608-112	13608-212	13608-712	51.5"	26	12"	33 lb
13608-118	13608-218	13608-718	51.5"	26	18"	37 lb

Note. Order 1/4" installation hardware separately

Accessories		
Part Number	Description	Shipping Weight
Combination Pan Head, Pilot Point, Mounting Screws		
40605-001	#12-24 x 1/2"L, Zinc, Pack of 50	1 lb
40605-005	#12-24 x 1/2"L, Black, Pack of 50	1 lb
Installation Hardware		
02007-004	1/4-10 x 2"L, Hex Lag Screw	1 lb
Single-Sided Universal Horizontal Cable Manager		
30139-719	19"W x 4.96"D, 1 RMU	2 lb
Saf-T-Grip® Strap		
02006-201	Open Loop Series, Pack of 25	1 lb

CPI CHATSWORTH PRODUCTS, INC.

Cablofil Cable Tray - CF 54



Cablofil Wiremesh Cable Tray concept based upon performance, safety and economy; three qualities which make Cablofil Wiremesh Cable Tray system preferred by installers. Cablofil adapts to the most complex configurations, and its structure gives maximum strength for minimum weight. The ease of creating fittings, carried out on site, as well as the wide range of unique and universal accessories gives complete freedom in routing combined with exceptionally fast installation.

FEATURES

- **Special Safe-T-Edge:** protects installers from sharp ends while it prevents cables from fraying.
- **Wire mesh is smooth and round:** to resist dirt and dust build-up.
- **Standard 10' lengths:** straight and easy to handle.
- **Large mesh size (2" wide by 4" long):** allows cable installers to route cables in and out at any point without cutting the tray.
- **1" to 6" high flange side of the tray:** prevents cables from falling off.
- **Dimensions are nominal:** other sizes available on request.
- **Available in the following finishes:** Electro Zinc, Hot Dipped Galvanized, Stainless Steel 316L, Black Painted, and other Painted.

Specifications

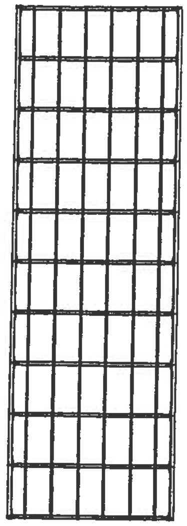
The below "View Specifications Chart" highlights all sizes and finishes available.

CF 105 CABLOFIL CABLE TRAY

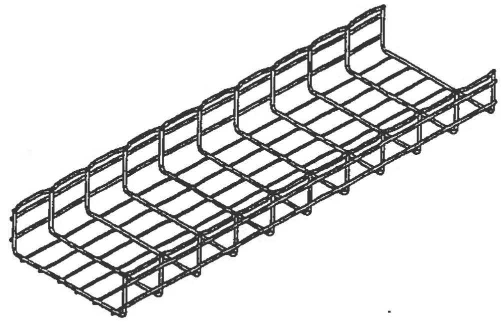
CABCS0053

CABLOFIL®
INNOVATORS IN CABLE MANAGEMENT

8319 State Route 4
Mascoutah IL 62258
Phone: 800-658-4641
618-566-3230
Fax: 618-566-3250
www.cablofil.com

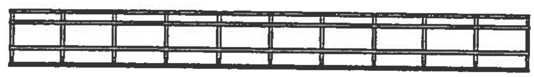


TOP

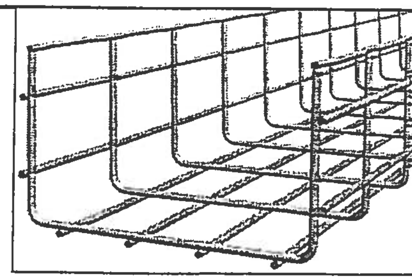


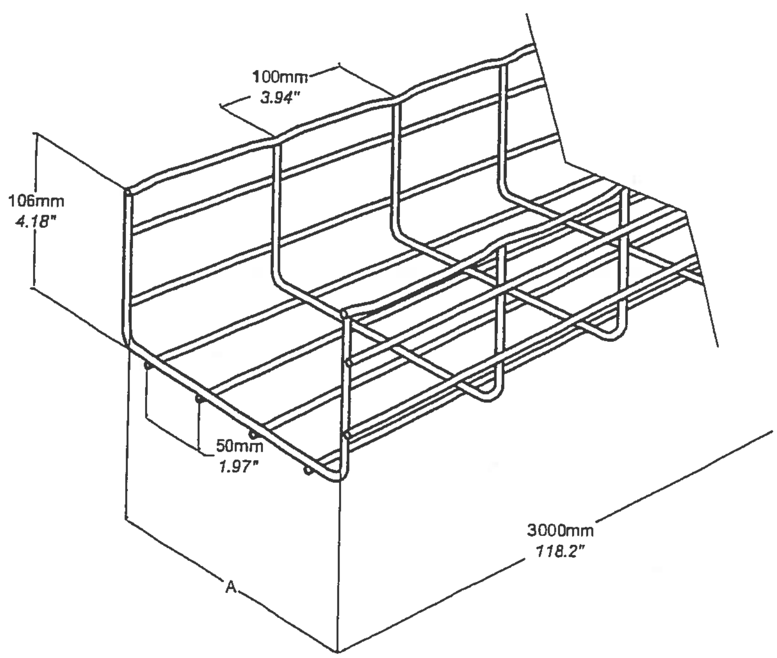
ISOMETRIC

FRONT



SIDE





	A in	A mm	lb
CF105 100	3.937	100	9.0
CF105 150	5.904	150	10.2
CF105 200	7.872	200	13.4
CF105 300	11.81	300	21.2
CF105 400	15.75	400	22.8
CF105 450	17.71	450	25.9
CF105 500	19.68	500	27.5
CF105 600	23.62	600	30.4

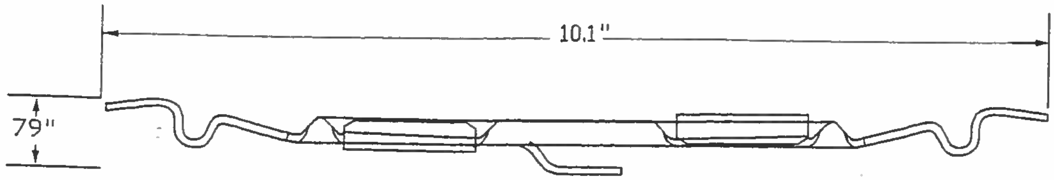
EZ | GC | 304L | 316L | BL | PE

EDRN FAST SPLICE

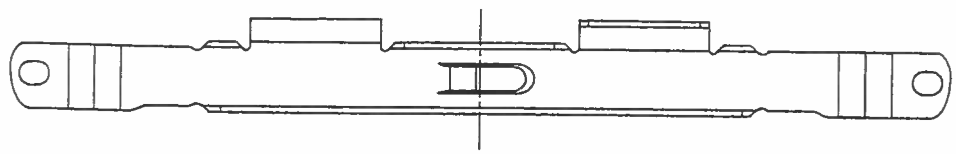
CABCS0026

CABLOFIL®
INNOVATORS IN CABLE MANAGEMENT

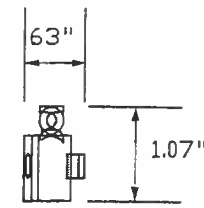
8319 State Route 4
Mascoutah IL 62258
Phone: 800-658-4641
618-566-3230
Fax: 618-566-3250
www.cablofil.com



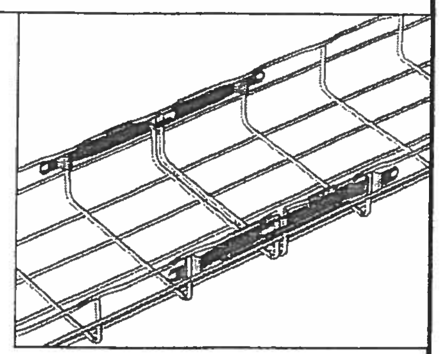
TOP

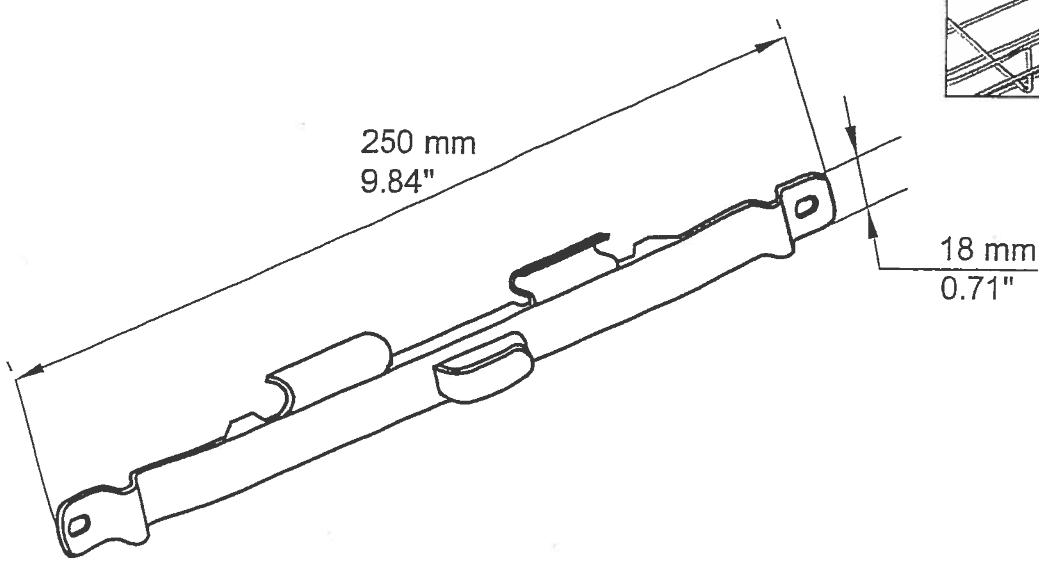


SIDE



FRONT





	lb				
EDRN	0.154	EZ	DC	BL	PE

Legrand®

Wiremold

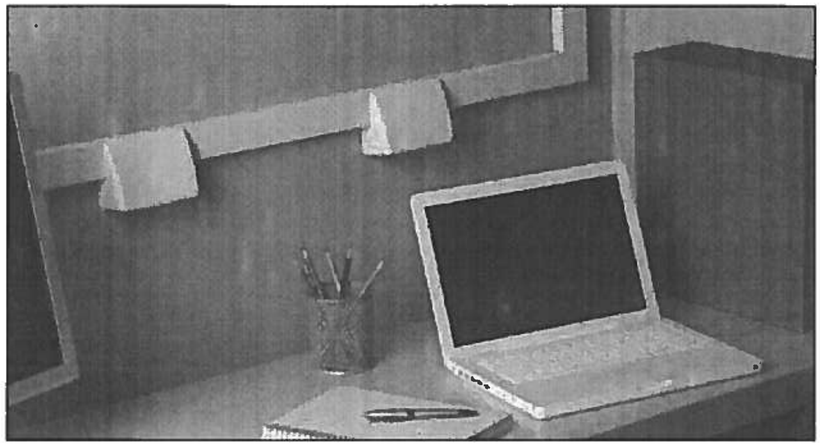
2400® & 2400D®

Series Steel Raceway

Low Profile, Single and Dual Channel, Steel Raceway

Wiremold 2400 Series Raceway is a single compartment raceway designed for communication or power applications and ideal for use in classrooms, offices, and hotel applications, or anywhere a small low profile raceway is needed.

2400D Series Divided Raceway is a low profile steel raceway for use where a limited number of power and low voltage cables are required in the same raceway.



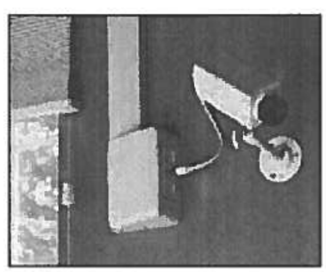
2400 Series Raceway shown with our new Downward Facing Receptacles in a typical school library application.

FEATURES & BENEFITS

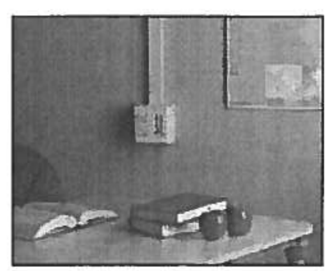
- **Steel raceway.** Provides superior strength for any dry location.
- **Single- and dual-compartment attractive low profile raceway design.** Provides functionality and flexibility with aesthetics for single or dual service applications.
- NEW! **Downward facing activations.** Streamlines the raceway appearance and provides increased protection for both activations and cabling.
- **ScuffCoat™ finish.** Tough durable ScuffCoat finish makes a scratch-resistant surface that can be painted.
- **Complete line of fittings.** Provides complete wiring solution and allows for interconnection between raceway systems.
- **Removable cover.** Allows easy access to wiring for changes and additions.
- **One- and two-gang device boxes.** Now you can wire devices into the raceway system, making 2400 Series Raceway an excellent choice for communication wiring.
- **Over the raceway boxes.** Provides tremendous labor savings. Boxes mount over continuous run of raceway base eliminating the need to cut raceway when locating devices.
- **Bend radius control fittings.** Corner and tee fittings are UL verified to maintain full capacity 2" [51mm] bend radius control and exceed the recommendations of EIA/TIA 569A. These fittings provide cable protection in both lay-in and pull-through cable installations.
- **V2475D Bridge Fitting.** Provides ability to bridge 2400 Series Raceways over existing installations of 2400, 700, and 500 Series Raceways.
- **In-line field-configurable receptacles.** Receptacles can be installed at any point along the raceway without a box.
- **In-line 106 frame data outlet.** A wide variety of data modules can be installed anywhere along the raceway run without a box.
- **Datacom connectivity options.** Accepts industry standard and proprietary devices from a wide range of manufacturers to provide a seamless and aesthetically pleasing interface for voice, data, audio, and video applications at the point of use.
- **UL and cUL Listed component raceways.** File E4376 Guide RJBT, Fittings: File E41751 Guide RJPR. Meets Article 386 of NEC and meets Section 12-600 of CEC.

NEW!

Now compatible with A/V devices.

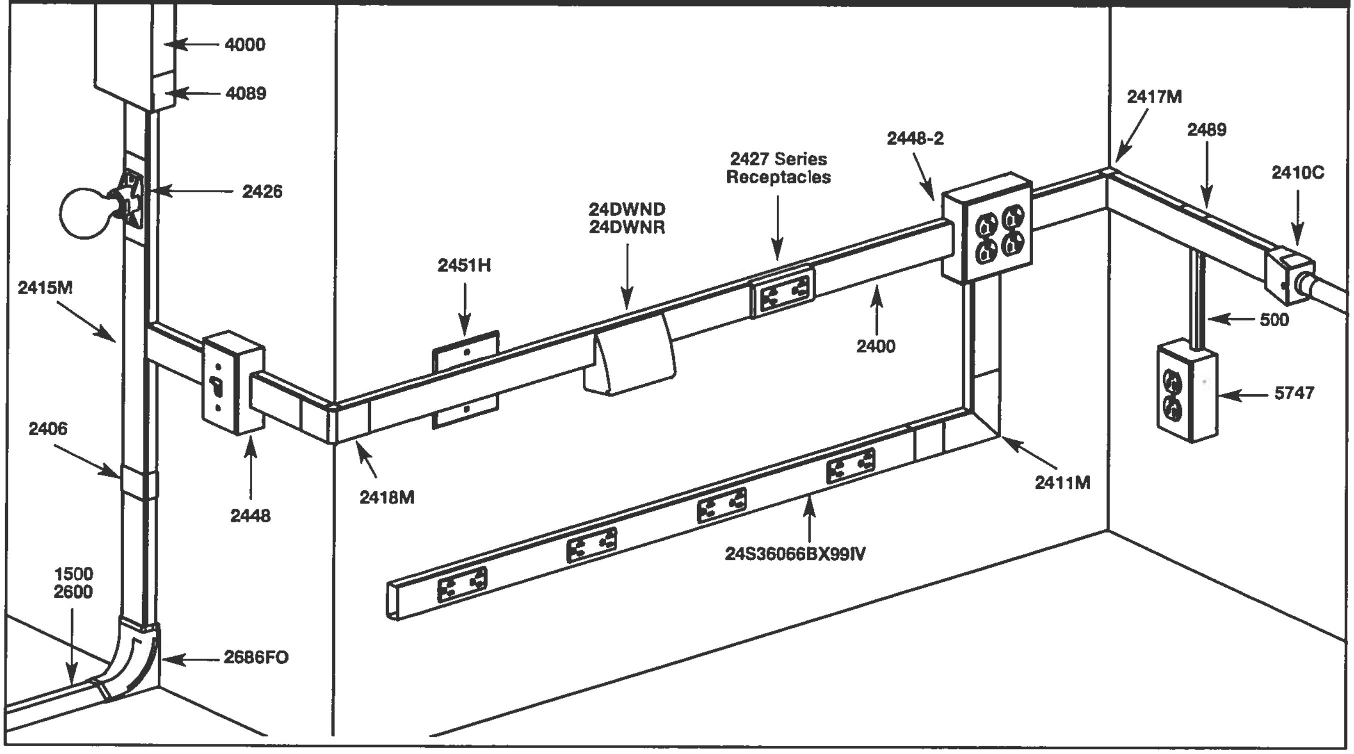


24DWNR Downward Facing Activation shown in a security application.



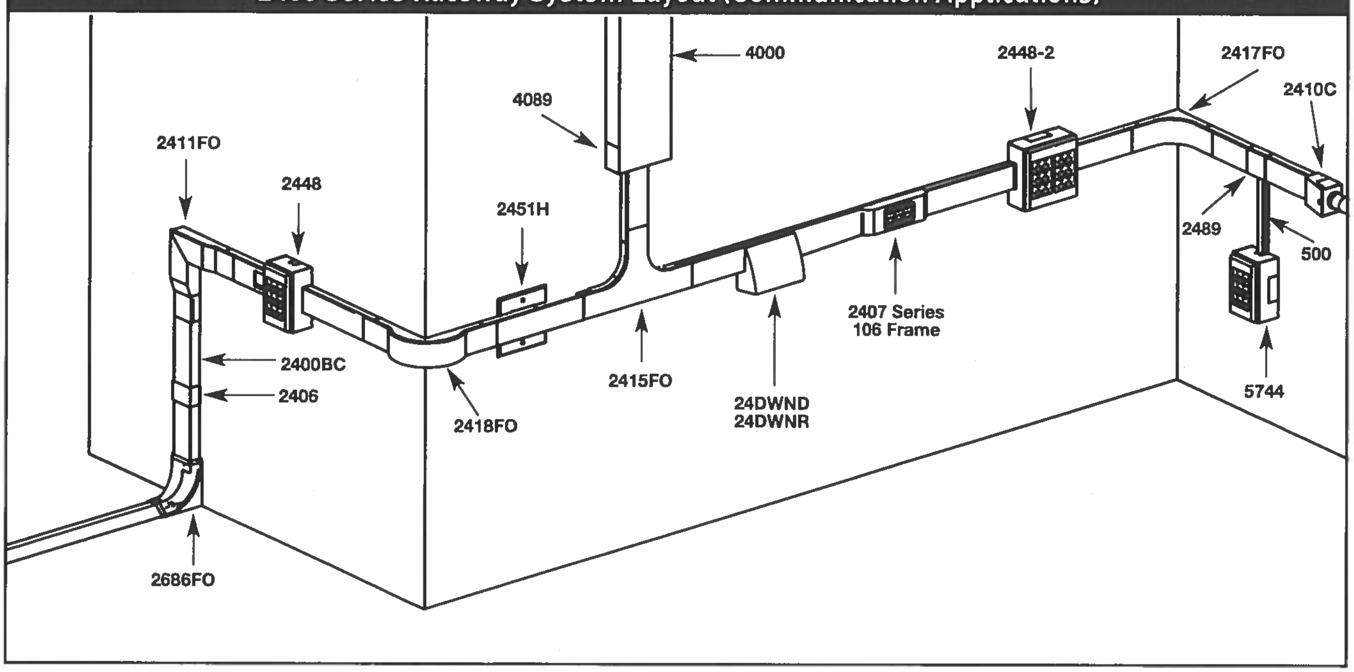
2400 Series Raceway shown with our new 2444D-2N Divided Device Box in a typical classroom application.

2400 Series Raceway System Layout (Power Applications)



NOTE: Illustration is for product applications and may not represent proper circuit wiring.
Color prefix is not included in part number identification.

2400 Series Raceway System Layout (Communication Applications)



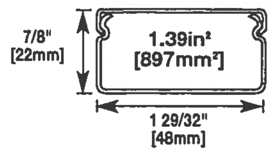
NOTE: Illustration is for product applications and may not represent proper circuit wiring.
Color prefix is not included in part number identification.

2400 Series Raceway Wire Fill Capacity Charts

2400 Raceway Wire Fill Capacities for Power*

WIRE SIZE THHN/THWN	O.D. Inches	O.D. [mm]	NUMBER OF CONDUCTORS (40% FILL) WITHOUT DEVICES	NUMBER OF CONDUCTORS (40% FILL) WITH 2427 RECEPTACLE
14 AWG	0.111	[2.8]	57	12
12 AWG	0.130	[3.3]	41	9
10 AWG	0.164	[4.2]	26	–

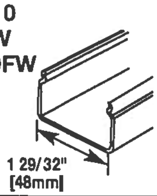
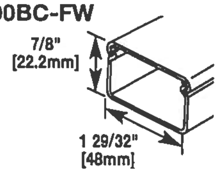
*For additional information refer to Technical Section of Wiremold Product Guide.



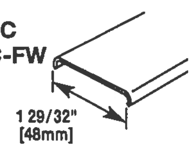
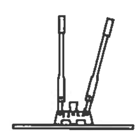
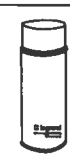
2400 Raceway Wire Fill Capacities for Communications

	CABLE/WIRE SIZE	O.D. (Approx Dia.) Inches	O.D. (Approx Dia.) [mm]	40% FILL**
UNSHIELDED TWISTED PAIR	4-Pair, 24 AWG, Cat 3	0.190	[4.8]	19
	4-Pair, 24 AWG, Cat 5e	0.210	[5.3]	16
	4-Pair, 24 AWG, Cat 6	0.250	[6.3]	11
	4-Pair, 24 AWG, Cat 6a	0.354	[8.9]	5
	25-Pair, 24 AWG	0.410	[10.4]	4
COAXIAL	RG6/U	0.270	[6.9]	9
FIBER	ZipCord	0.118 x 0.236	[3 x 6]	20
	Round 4 Strand Fiber	0.187	[4.8]	20
	Round 6 Strand Fiber	0.256	[6.5]	10

2400 Series Raceway Base & Cover Ordering Information

Catalog No./Item	Description/Specifications
V2400B **V2400B-10** **2400B-FW** **2400B-10FW** 	**Raceway Base –** .040" [1.0mm] steel; packed twenty 5' [1.5m] lengths per carton, or ten 10' [3.0m] lengths per carton.
V2400BC **2400BC-FW** 	**Raceway Base & Cover –** .040" [1.0mm] steel. Packed ten 5' [1.5m] lengths of base and cover per carton.

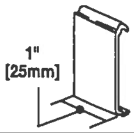
NOTE: "V" prefix indicates Ivory color, "-FW" suffix indicates Fog White color.

Catalog No./Item	Description/Specifications
V2400C **2400C-FW** 	**Raceway Cover –** .040" [1.0mm] steel; packed twenty 5' [1.5m] lengths per carton.
624 	**2400 Raceway Base & Cover Cutter –** Portable cutter for 2400 & 2400D Series Raceway Base and Cover. Provides a clean and easy square cut every time.
624BCK	**Replacement Blade Kit –** Replacement blades and die set for 624 Cutter.
IWE-S **DVWE-S** 	**Spray Paint –** Used for touching up large areas. Available in Ivory (IWE-S) or Fog White (DVWE-S). Contains 12 oz. of paint. **NOTE: Can only be shipped via ground transportation.**
IWE-P **DVWE-P** 	**Touch-Up Paint Pen –** Used for touching up small areas. Available in Ivory (IWE-P) or Fog White (DVWE-P). Contains 0.3 oz. of paint.

2400 Series Raceway Fittings Ordering Information

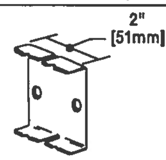
Catalog No./Item	Description/Specifications

2400WC



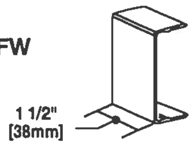
Wire Clip – Additional support for conductors in 2400 Series Raceway. (Nonmetallic)

2401



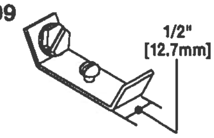
Coupling – Joins sections of 2400B Base.

V2406
2406-FW



Cover Clip – Covers joints where sections of 2400 Series Raceway cover or base come together. Nonmetallic construction.

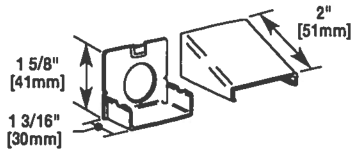
2409



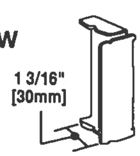
Ground Clamp – Connects equipment grounding conductor to 2400 Series Raceway. No. 10 ground screw provided.

V2410A
2410A-FW

Entrance End Fitting – Connects 2400 Series Raceway with 1/2" trade size conduit or armored cable.

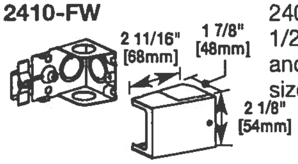


V2410B
2410B-FW



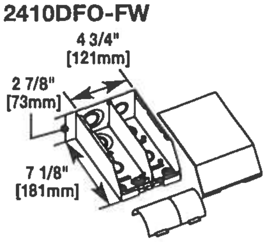
Blank End Fitting – Closes off open end of 2400 Series Raceway.

V2410C
2410-FW



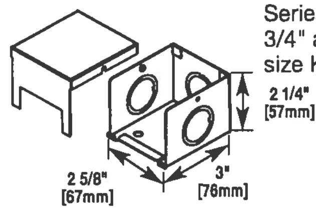
Entrance End Fitting – Feeds 2400 Series Raceway. Includes 1/2" and 3/4" trade size KOs on end and bottom. Additional 1/2" trade size KO on both sides.

V2410DFO
2410DFO-FW



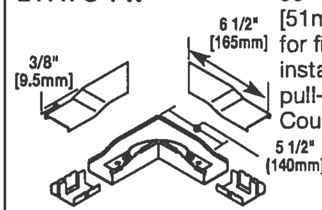
Divided Entrance End Fitting – Feeds 2400 & 2400D Series Raceway. Includes 1/2", 3/4", and 1" trade size KOs on back and end. Removable divider and bend radius control insert included.

V2410FC
2410FC-FW



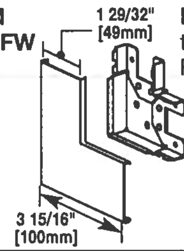
Full Capacity Entrance End Fitting – Feeds 2400 Series Raceway. Includes three 3/4" and 1" concentric trade size KOs.

V2411FO
2411FO-FW



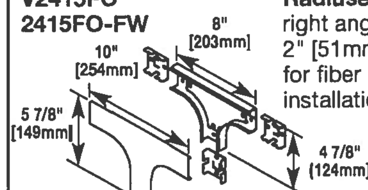
Radiused Flat Elbow – 90° flat corner that provides 2" [51mm] cable bend radius control for fiber optic and UTP/STP cable installations. Ideal for lay-in or pull-through installations. Couplings included.

V2411M
2411M-FW



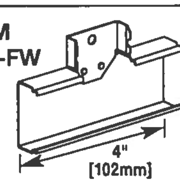
Flat Elbow – Makes right angle turns in runs of 2400 Series Raceway on same surface.

V2415FO
2415FO-FW



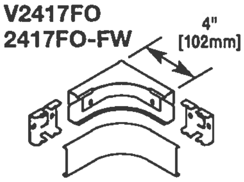
Radiused Tee – Branches at right angles. Provides a controlled 2" [51mm] cable bend radius control for fiber optic and UTP/STP cable installations. Couplings included.

V2415M
2415M-FW



Tee – Branches at right angles. Couplings included.

V2417FO
2417FO-FW



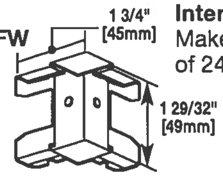
Radiused Internal Elbow – 90° internal corner. Provides a controlled 2" [51mm] cable bend radius control for fiber optic and UTP/STP cable installations. Couplings included.

NOTE: "V" prefix indicates Ivory color, "-FW" suffix indicates Fog White color.

2400 Series Raceway Fittings Ordering Information (continued)

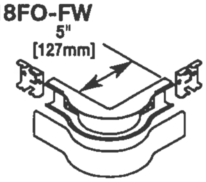
Catalog No./Item	Description/Specifications

V2417M
2417M-FW



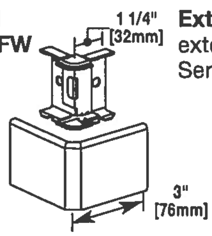
Internal Elbow – Makes 90° internal corners in runs of 2400 Series Raceway.

V2418FO
2418FO-FW



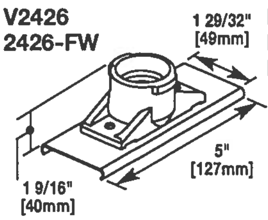
Radiused External Elbow – 90° external elbow. Provides a controlled 2" [51mm] cable bend radius control for fiber optic and UTP/STP cable installations. Couplings included.

V2418M
2418M-FW



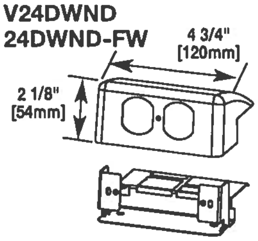
External Elbow – Makes 90° external corners in runs of 2400 Series Raceway.

V2426
2426-FW



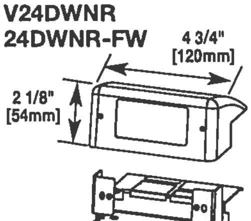
Lamp Holder – Medium base lamp holder 660W, 250V. Black general purpose phenolic.

V24DWND
24DWND-FW



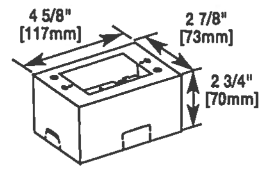
Downward Duplex Device Bracket – Labor saving, over-the-raceway device bracket. For 15A or 20A duplex receptacles or 106 style data frame in 2400 Series Raceway.

V24DWNR
24DWNR-FW



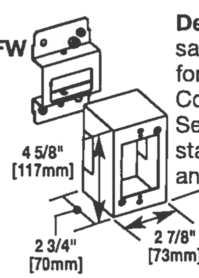
Downward Decorator Device Bracket – Labor saving over-the-raceway device bracket. For 15A or 20A decorator / GFCI receptacles or 106 style data frame in 2400 Series Raceway.

V2444
2444-FW



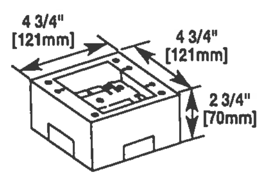
Extra Deep Device Box – One-gang device box has extra depth to permit installation of cabling that requires greater bend radius and storage. Cover has one twistout for 2400 Series Raceway on two sides and one twistout for 500 and 700 Series Raceway on the top and bottom. Accepts industry standard faceplates for electrical and communication devices.

V2444D
2444D-FW



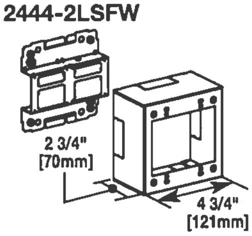
Device Box – One-gang, labor saving, over-the- raceway box for use with 2400 Series Raceway. Cover has two twistouts for 2400 Series Raceway. Accepts industry standard faceplates for electrical and communication devices.

V2444-2
2444-2FW



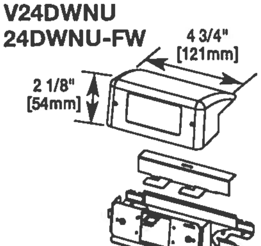
Extra Deep Device Box – Two-gang device box has extra depth to permit installation of cabling that requires greater bend radius and storage. Cover has four twistouts for 2400 Series Raceway. Base includes knockout to enable extension from existing single-gang flush wall box and 1/2" and 1" concentric trade size KOs. Accepts industry standard faceplates for electrical and communication devices.

V2444-2LS
2444-2LSFW



Device Box – Two-gang, labor saving, over-the-raceway box for use with 2400 Series Raceway. Cover has four twistouts for 2400 Series Raceway. Accepts industry standard faceplates for electrical and communication devices.

V24DWNU
24DWNU-FW



Downward Extron® MAAP Device Plate – Labor saving, over-the-raceway device plate. Accepts two Extron® Electronics MAAP single space modules.

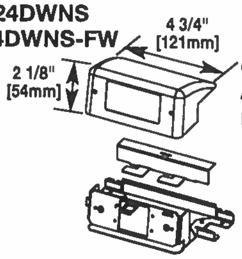
NOTE: "V" prefix indicates Ivory color, "-FW" suffix indicates Fog White color.

2400 Series Raceway Fittings Ordering Information (continued)

Catalog No./Item	Description/Specifications

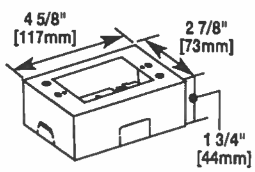
V24DWNS
24DWNS-FW

Downward Ortronics® Series II Device Plate – Labor saving, over-the-raceway device plate. Accepts one Ortronics® Series II module.



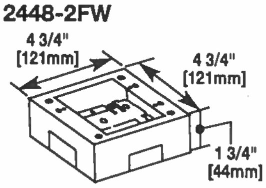
V2448
2448-FW

Device Box – One-gang device box. Cover has one twistout for 2400 Series Raceway on two sides and one twistout for 500 and 700 Series Raceway on the top and bottom. Base includes knockout to enable extension from existing single-gang flush wall box and 1/2" trade size KOs. Accepts industry standard faceplates for electrical and communication devices.



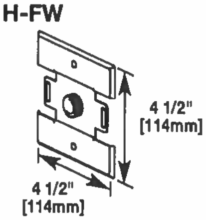
V2448-2
2448-2FW

Device Box – Two-gang device box. Cover has four twistout for 2400 Series Raceway. Base includes knockout to enable extension from existing single-gang flush wall box and 1/2" trade size KOs. Accepts industry standard faceplates for electrical and communication devices.



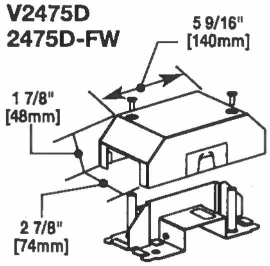
V2451H
2451H-FW

Back Feed Fitting – Feeds 2400 Series Raceway from an existing outlet box. Equipped with 1/2" trade size male bushing and lock nut washer for grounding.



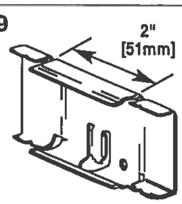
V2475D
2475D-FW

Bridge Fitting – Allows 2400 Series Raceway to bridge over existing installations of 2400, 500, or 700 Series Raceways.



V2489

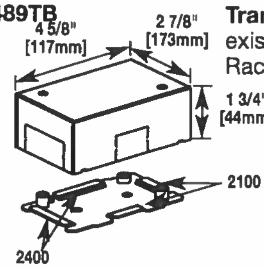
Side Reducing Connector – Connects 2400 Series Raceway with 500 Series Raceway.



Catalog No./Item	Description/Specifications

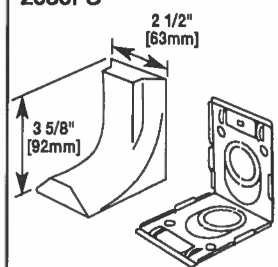
V2489TB

Transition Box – Connects existing installations of 2100 Series Raceway to 2400 Series Raceway.



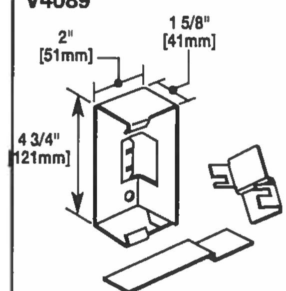
2686FO

Transition Feed Fitting – Eliminates offsetting of 2400 Series Raceway in connecting with surface panel boxes. Has 3/4" and 1" concentric trade size KOs with 1" trade size KO elongated so adjustment from surface to center of bushing is 1" [25mm] minimum to 1 5/8" [41mm] maximum. Has twistouts for transition to 1500 and 2600 Series Pancake Raceways.



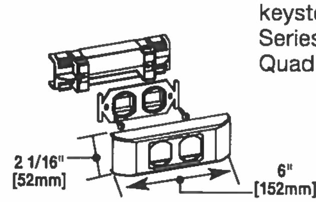
V4089

Reducing Connector – Reduces and connects 4000 Series Raceway to 2400 Series Raceway.



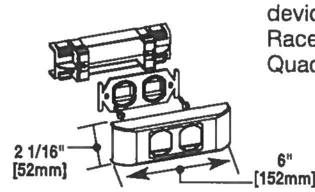
V2407-2CM
2407-2CMFW

106 Device Bracket and Frame – Installs two network wiring keystone device modules in 2400 Series Raceway. Does not support Quad 106 Frame.



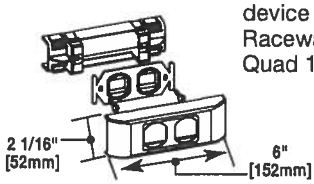
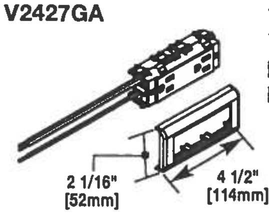
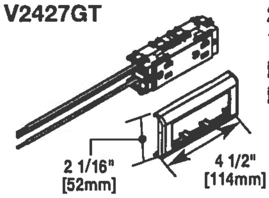
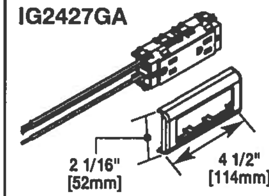
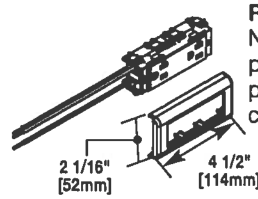
V2407-2TJ
2407-2TJFW

106 Device Bracket and Frame – Installs two Ortronics TracJack device modules in 2400 Series Raceway. Does not support Quad 106 Frame.



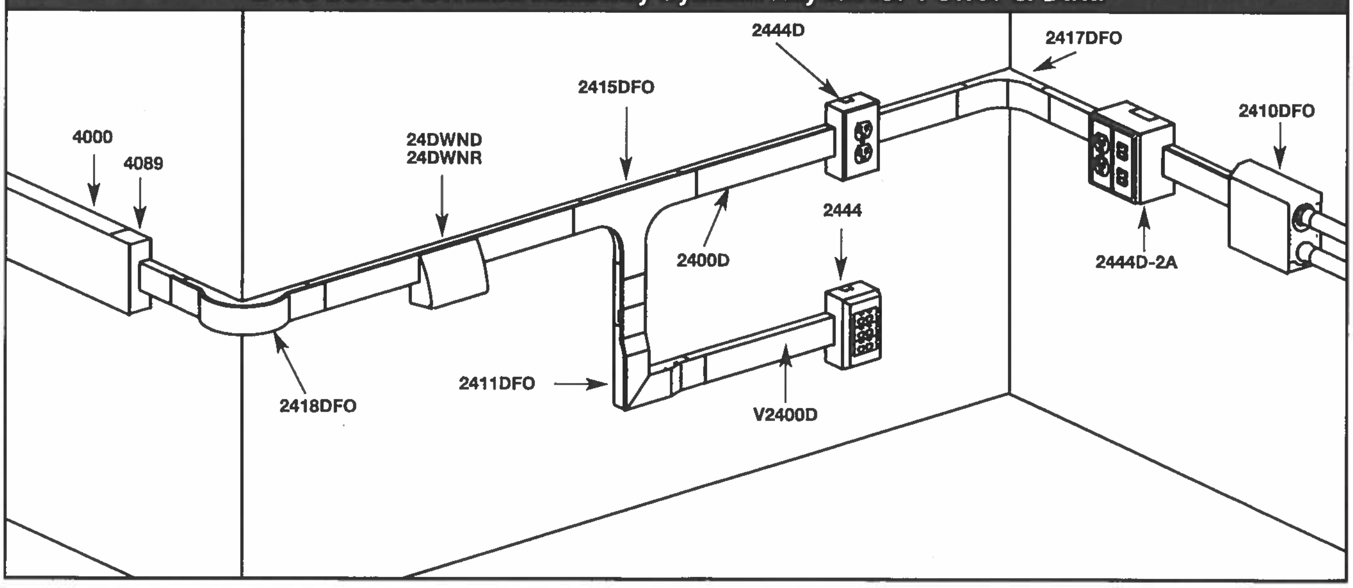
NOTE: "V" prefix indicates Ivory color, "-FW" suffix indicates Fog White color.

2400 Series Raceway Receptacles Ordering Information

Catalog No./Item	Description/Specifications
V2407-3TJ **2407-3TJFW**  	**106 Device Bracket and Frame –** Installs three Ortronics TracJack device modules in 2400 Series Raceway. Does not support Quad 100 Frame.
V2427GA  	**15A Duplex Receptacle** – 3-Wire 125V NEMA 5-15R receptacle provided with 10-1/2" [267mm] pigtails and inline splice connectors.
V2427GT  	**20A Duplex Receptacle** – 3-Wire 125V NEMA 5-20R receptacle provided with 10-1/2" [267mm] pigtails and inline splice connectors.
IG2427GA  	**15A Isolated Ground Duplex Receptacle** – 3-Wire 125V NEMA 5-15R orange receptacle provided with 10-1/2" [267mm] pigtails and inline splice connectors.
IG2427GT  	**20A Isolated Ground Duplex Receptacle** – 3-Wire 125V NEMA 5-20R orange receptacle provided with 10-1/2" [267mm] pigtails and inline splice connectors.

NOTE: "V" prefix indicates Ivory color, "-FW" suffix indicates Fog White color.

2400 Series Divided Raceway System Layout for Power & Data



NOTE: Illustration is for product applications and may not represent proper circuit wiring. Color prefix is not included in part number identification.

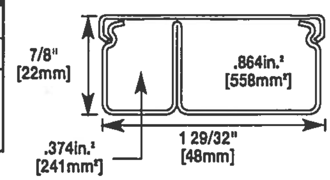
2400 Series Divided Raceway Wire Fill Capacities

2400 Series Divided Raceway Wire Fill Capacities for Power

WIRE SIZE THHN/THWN	O.D. Inches	O.D. [mm]	NUMBER OF CONDUCTORS (40% FILL) 1/3 COMP.	NUMBER OF CONDUCTORS (40% FILL) 2/3 COMP.
14 AWG	0.111	[2.8]	11	26
12 AWG	0.130	[3.3]	9	19
10 AWG	0.164	[4.2]	6	11

***For additional information refer to Technical Section of Wiremold Product Guide.**

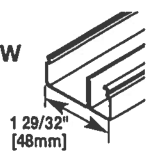
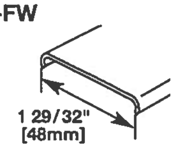
2400D



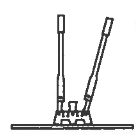
2400 Series Divided Raceway Wire Fill Capacities for Communications

	CABLE/WIRE SIZE	O.D. (Approx Dia.) Inches	O.D. (Approx Dia.) [mm]	1/3 COMPARTMENT 40% FILL	2/3 COMPARTMENT 40% FILL**
UNSHIELDED TWISTED PAIR	4-Pair, 24 AWG, Cat 3	0.190	[4.8]	5	12
	4-Pair, 24 AWG, Cat 5e	0.210	[5.3]	4	9
	4-Pair, 24 AWG, Cat 6	0.250	[6.3]	3	7
	4-Pair, 24 AWG, Cat 6a	0.354	[8.9]	1	3
	25-Pair, 24 AWG	0.410	[10.4]	1	2
COAXIAL	RG6/U	0.270	[6.9]	2	6
FIBER	ZipCord	0.118 x 0.236	[3 x 6]	5	12
	Round 4 Strand Fiber	0.187	[4.8]	5	12
	Round 6 Strand Fiber	0.256	[6.5]	2	6

2400 Series Divided Raceway Base & Cover Ordering Information

Catalog No./Item	Description/Specifications
V2400BD **2400BD-FW** 	**Divided Raceway Base** – .040" [1.0mm] steel; divided into 1/3 and 2/3 compartments. Packed ten 10' [3.0m] lengths per carton.
V2400C **2400C-FW** 	**Raceway Cover** – .040" [1.0mm] steel; packed twenty 5' [1.5m] lengths per carton.

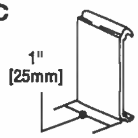
NOTE: "V" prefix indicates Ivory color, "-FW" suffix indicates Fog White color.

Catalog No./Item	Description/Specifications
624 	**2400 Raceway Base & Cover Cutter –** Portable cutter for 2400 & 2400D Series Raceway Base and Cover. Provides a clean and easy square cut every time.
624BCK	**Replacement Blade Kit –** Replacement blades and die set for 624 Cutter.
IWE-S **DVWE-S** 	**Spray Paint** – Used for touching up large areas. Available in Ivory (IWE-S) or Fog White (DVWE-S). Contains 12 oz. of paint. **NOTE: Can only be shipped via ground transportation.**
IWE-P **DVWE-P** 	**Touch-Up Paint Pen** – Used for touching up small areas. Available in Ivory (IWE-P) or Fog White (DVWE-P). Contains 0.3 oz. of paint.

2400 Series Divided Raceway Fittings (continued)

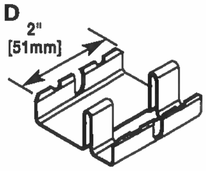
Catalog No./Item	Description/Specifications

2400WC



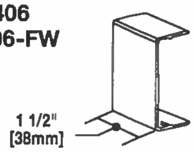
Wire Clip – Additional support for conductors in 2400D Series Raceway. (Nonmetallic)

2401D



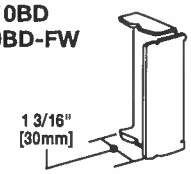
Divided Coupling – Joins sections of 2400DB Divided Base.

V2406
2406-FW



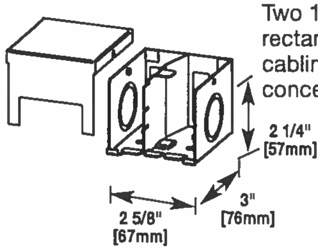
Cover Clip – Covers joints where sections of 2400 Series Raceway cover or base come together. Nonmetallic construction.

V2410BD
2410BD-FW



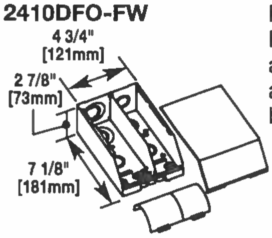
Divided Blank End Fitting – Closes off open end of 2400D Series Raceway.

V2410D
2410D-FW



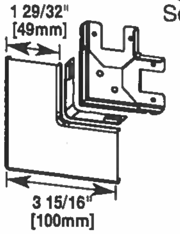
Divided Entrance End Fitting – Feeds 2400D Series Raceway. Two 1/2" trade size KOs and two rectangular KOs for communication cabling. Two additional 1" and 3/4" concentric trade size KOs on sides.

V2410DFO
2410DFO-FW



Divided Entrance End Fitting – Feeds 2400 & 2400D Series Raceway. Includes 1/2", 3/4", and 1" trade size KOs on back and end. Removable divider and bend radius control insert included.

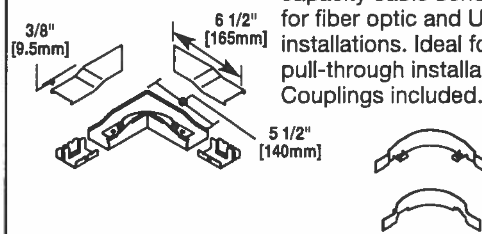
V2411D
2411D-FW



Divided Flat Elbow – Makes right angle turns in runs of 2400D Series Raceway on same surface.

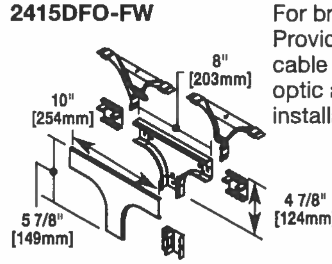
Catalog No./Item	Description/Specifications

V2411DFO
2411DFO-FW



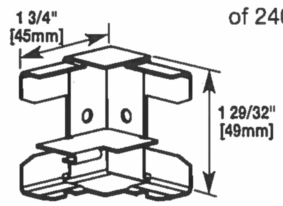
Radiused Divided Flat Elbow – 90° flat elbow with integral dividers to provide 2" [51mm] full capacity cable bend radius control for fiber optic and UTP/STP cable installations. Ideal for lay-in or pull-through installations. Couplings included.

V2415DFO
2415DFO-FW



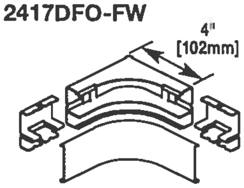
Radiused Divided Tee – For branches at right angles. Provides 2" [51mm] full capacity cable bend radius control for fiber optic and UTP/STP cable installations. Couplings included.

V2417D
2417D-FW



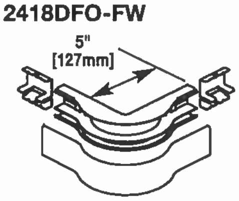
Divided Internal Elbow – Makes internal 90° corners in runs of 2400D Series Raceway.

V2417DFO
2417DFO-FW



Radiused Divided Internal Elbow – 90° internal corner. Provides a 2" [51mm] full capacity cable bend radius control for fiber optic and UTP/STP cable installations. Couplings included.

V2418DFO
2418DFO-FW

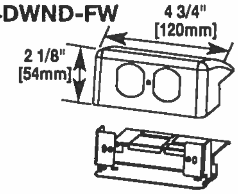


Radiused Divided External Elbow – 90° external elbow. Provides a 2" [51mm] full capacity cable bend radius control for fiber optic and UTP/STP cable installations. Couplings included.

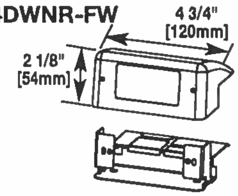
NOTE: "V" prefix indicates Ivory color, "-FW" suffix indicates Fog White color.

2400 Series Divided Raceway Fittings Ordering Information (continued)

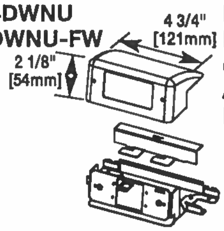
Catalog No./Item	Description/Specifications
V24DWND **24DWND-FW**	**Downward Duplex Device Bracket** – Labor saving over-the-raceway device bracket. For 15A or 20A duplex receptacles or 106 style data frame in 2400D Series Raceway.



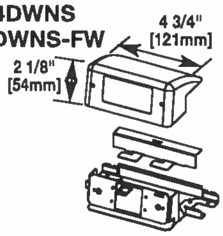
Catalog No./Item	Description/Specifications
V24DWNR **24DWNR-FW**	**Downward Decorator Device Bracket** – Labor saving over-the-raceway device bracket. For 15A and 20A decorator/GFCI receptacles or 106 style data frame in 2400D Series Raceway.



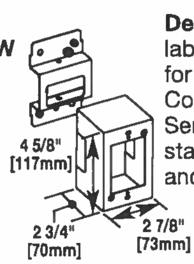
Catalog No./Item	Description/Specifications
V24DWNU **24DWNU-FW**	**Downward Extron® MAAP Device Plate** – Labor saving, over-the-raceway device plate. Accepts two Extron® Electronics MAAP single space modules.



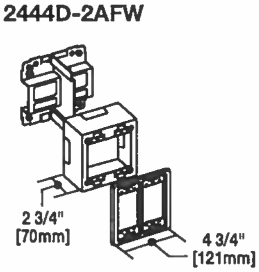
Catalog No./Item	Description/Specifications
V24DWNS **24DWNS-FW**	**Downward Ortronics® Series II Device Plate** – Labor saving, over-the-raceway device plate. Accepts tone Ortronics® Series II module.



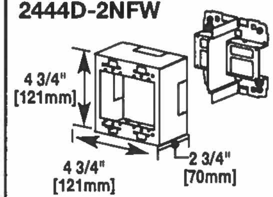
Catalog No./Item	Description/Specifications
V2444D **2444D-FW**	**Device Box** – One-gang, labor saving, over-the-raceway box for use with 2400D Series Raceway. Cover has two twistouts for 2400D Series Raceway. Accepts industry standard faceplates for electrical and communication devices.



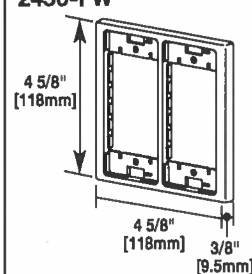
Catalog No./Item	Description/Specifications
V2444D-2A **2444D-2AFW**	**Divided Device Box** – Divided two-gang, labor saving, over-the-raceway box for use with 2400D Series Raceway. Provides the ability to have both power and low voltage at a single point-of- use. Accepts 5507 Series Faceplates, Ortronics® TracJack & Series II Modules (requires S2-EPL Plate), Pass & Seymour Activate Series Inserts (requires CM-EPLA Plate) and Wiremold Open System Communication Modules (requires CM-EPLA Plate).



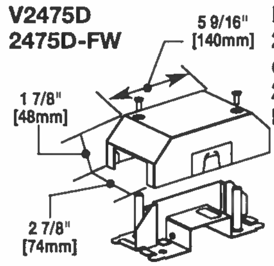
Catalog No./Item	Description/Specifications
V2444D-2N **2444D-2NFW**	**Divided Box** – Labor savings over-the- raceway box. A divided two-gang box for use with 2400D Series Raceway. Allows both power and low voltage at a single point-of-use. For use with commercially available faceplates (not supplied).



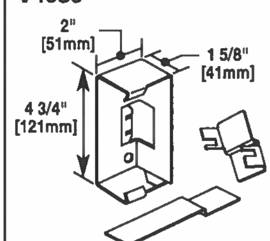
Catalog No./Item	Description/Specifications
V2450 **2450-FW**	**Device Bracket** – For use with 2444D-2N for both power and low voltage at a single point of use. Accepts 5507 Series Faceplates, Ortronics® TracJack & Series II Modules (requires S2-EPL Plate),Pass & Seymour Activate Series Inserts (requires CM-EPLA Plate) and Wiremold Open System Communication Modules (requires CM-EPLA Plate).



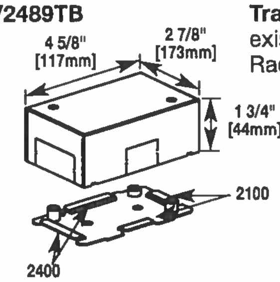
Catalog No./Item	Description/Specifications
V2475D **2475D-FW**	**Bridge Fitting** – For allowing 2400D Series Raceway to bridge over existing installations of 2400, 2400D, 500, and 700 Series Raceways.



Catalog No./Item	Description/Specifications
V4089	**Reducing Connector** – For reducing from 4000 Series Raceway to 2400D Series Raceway.

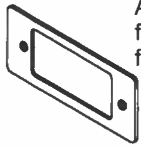
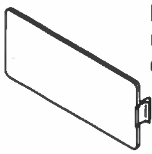
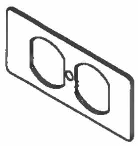
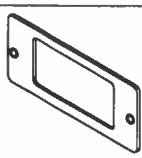
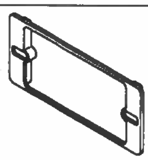
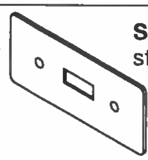
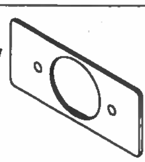
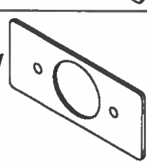
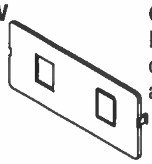
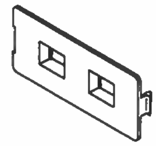
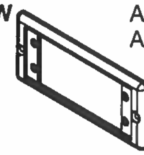
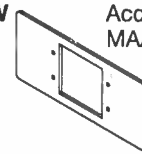
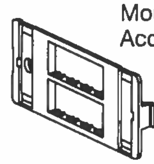
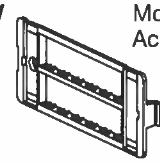
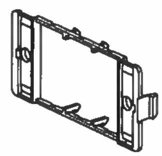


Catalog No./Item	Description/Specifications
V2489TB	**Transition Box** – Connects existing installations of 2100 Series Raceway to 2400D Series Raceway.



NOTE: "V" prefix indicates Ivory color, "-FW" suffix indicates Fog White color.

5507 Series Faceplates Ordering Information

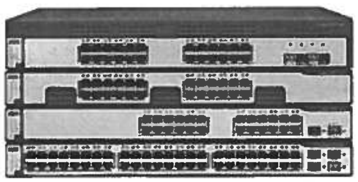
Catalog No./Item	Description/Specifications
5507AD **5507AD-FW** 	**Modular Furniture Adapter –** Accepts Activate modular furniture bezel and other modular furniture adapters.
5507B **5507B-FW** 	**Blank Faceplate** – Covers unused compartments in the device bracket.
5507D **5507D-FW** 	**Duplex Faceplate** – Covers duplex style devices. Accepts 106 Frame.
5507R **5507R-FW** 	**Rectangular Faceplate** – Covers rectangular style devices.
5507S 	**Rectangular Spacer –** Mounts commercial device plates. Installs between the device bracket and a device.
5507SW **5507SW-FW** 	**Switch Faceplate** – Covers standard toggle switches.
5507T1 **5507T1-FW** 	**Single Receptacle Faceplate –** Covers single receptacles – 1.59" [40.4mm] diameter.
5507T2 **5507T2-FW** 	**Single Receptacle Faceplate –** Covers single receptacles – 1.41" [35.8mm] diameter.
5507RJ **5507RJ-FW** 	**Dual RJ11/RJ45 Connector Faceplate –** Mounts one or two keystone device modules, has one opening and a KO for the other.
5507FRJ **5507FRJ-FW** 	**Flush Dual RJ11/RJ45 Faceplate –** Mounts one or two keystone device modules, recessed to provide a flush installation. Has one opening and a KO for the other.
5507AAP **5507AAP-FW** 	**Extron® AAP Faceplate –** Accepts two Extron® Electronics AAP single space modules.
5507MAAP **5507MAAP-FW** 	**Extron® MAAP Faceplate –** Accepts two Extron® Electronics MAAP single space modules.
5507-4TJ **5507-4TJFW** 	**Ortronics® Faceplate** – Mounts Ortronics datacom inserts. Accepts four TracJack Devices.
5507-6TJ **5507-6TJFW** 	**Ortronics® Faceplate** – Mounts Ortronics datacom inserts. Accepts six TracJack Devices.
CM-EPLA **CM-EPLA-FW** 	**End Plates** – Mounts Pass & Seymour Activate and Wiremold Open System communication modules into 5507 Series Faceplates. Includes two outlet identification labels with clear covers and two matching screw covers.
S2-EPL **S2-EPL-FW** 	**End Plates** – Mounts Ortronics Series II modules into 5507 Series Faceplates. Includes two outlet identification labels with clear covers and two matching screw covers.

NOTE: All faceplates have a standard measurement of 4 1/4" x 1 7/8" [108mm x 34mm].
Part number without prefix indicates Ivory color, "-FW" suffix indicates Fog White color.

Cisco Catalyst 3750 Series Switching Solutions

The Cisco® Catalyst® 3750 Series is an innovative line of multilayer Fast Ethernet and Gigabit Ethernet switches featuring Cisco StackWise™ technology that allows customers to build a unified, highly resilient switching system—one switch at a time.

Figure 1 Cisco Catalyst 3750 Series Switches



Key Features

- Stackable, fixed-configuration switches with Cisco StackWise™ technology and a 32-Gbps interconnect for a unified, resilient system of up to nine switches
- Layer 2-4 switching and intelligent services with dynamic IP routing and IPv6
- Fast Ethernet, Gigabit Ethernet, and 10 Gigabit Ethernet connectivity
- Up to 48 10/100/1000 ports plus 4 Small Form-Factor Pluggable (SFP) ports per stackable switch
- Integrated Power over Ethernet (PoE) (Cisco pre-standard and IEEE 802.3af); up to 24 ports with 15.4 watts (W) or 48 ports with 7.3W
- Integrated wireless LAN controller supporting up to 200 access points
- AC power supply failure protection with external redundant power supply

Key Benefits

Availability—802.1S/W enables standards-based fault tolerance, load balancing, and rapid recovery; Flexlink provides sub 100-millisecond convergence; Per VLAN Spanning Tree Plus (PVST+) increases available bandwidth by allowing traffic on redundant link

Cisco StackWise™ Technology—One IP address and one command-line interface (CLI) simplify management; a 32-Gbps resilient -architecture speeds convergence; 1:N stack master redundancy and Layer 3 uplink resilience as well as cross-stack Cisco EtherChannel® technology and QoS increase availability; autoconfiguration and Cisco IOS® Software version check and update accelerate deployment; hot add and delete of switches keep the stack running

Power over Ethernet (PoE)—370W PoE simplify IP telephony, wireless, and video surveillance deployments; intelligent powermanagement features provide greater control and help extend the power budget; combined with Fast Ethernet or Gigabit Ethernet maximizes existing infrastructure investment

Layer 3—Advanced routing protocols like Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), Border Gateway Protocol (BGP), Static Routing, and Policy Based Routing (PBR) increase network scale; equal-cost routing as well as multicast routing such as Protocol Independent Multicast (PIM) maximize network resources; Virtual Route Forwarding Lite (VRF-Lite) secures traffic; IPv6 simplifies network addressing and mobile IP while increasing security

QoS—Traffic Shaping smoothes bursty traffic flows without dropping packets; shaped Round Robin helps guarantee bandwidth to mission-critical applications; Scavenger Queueing protects against worms that can overload resources

Management—Cisco Smartports allows fast and easy configuration of advanced Cisco Catalyst intelligent features; express setup facilitates quick and easy setup through a Web-based interface; resource templates help tailor switch resources for the application

Security—Dynamic Host Configuration Protocol (DHCP) snooping allows only trusted ports to relay DHCP messages, eliminating rogue DHCP servers; Network Access Control (NAC) prevents the propagation of costly worms and viruses; Dynamic ARP Inspection and IP Source Guard prevent against man-in-the-middle attacks; 802.1x and Identity-Based Network Services allow only authorized persons on the network; port security prevents MAC address flooding attacks

Wireless—Integrated wireless LAN controller delivers centralized security policies, intrusion protection, RF management, QoS and Layer 3 fast secure roaming for Wireless LANs (WLANs)

Customers

The Cisco Catalyst 3750 Series solutions are ideal for:

- Customers with 250 or more employees who need network equipment to enhance business productivity
- Customers who expect resiliency, security, and scalability
- Customers who want to quickly deploy and easily manage their networks
- Customers who are planning to deploy IP telephony, wireless, or gigabit-to-the-desktop (GTTD)

Software Options

Cisco Catalyst 3750 Series switches can be purchased with the IP Base (formerly called SMI) or IP Services (formerly called EMI) licenses.

- The IP Base license offers advanced QoS, rate-limiting, ACLs, IGMP Snooping, and routing capabilities such as RIP, static routing, and EIGRP Stub
- The IP Services license provides a richer set of enterprise-class features, including advanced hardware-based IP Unicast and IP Multicast routing, PRB, and advanced IP routing protocols

CISCO

Cisco Catalyst 3750 Series Switching Solutions

Ordering Information

Cisco Catalyst 3750 Series Products (without PoE)

Part Number	Description
WS-C3750G-24TS-S1U	24 10/100/1000 ports + 4 SFP ports; IP Base Image; 1 RU
WS-C3750G-24TS-E1U	24 10/100/1000 ports + 4 SFP ports; IP Services Image; 1 RU
WS-C3750G-48TS-S	48 10/100/1000BASE-T ports + 4 SFP ports; IP Base Image and IP Services Image; 1 RU
WS-C3750G-48TS-E	48 10/100/1000T ports + 4 SFP ports; IP Services Image
WS-C3750-24TS-S	24 10/100 ports + 2 SFP ports; IP Base Image
WS-C3750-24TS-E	24 10/100 ports + 2 SFP ports; IP Services Image
WS-C3750-24FS-S	24 100BASE-FX ports + 2 SFP ports; IP Base Image
WS-C3750-48TS-S	48 10/100 ports + 4 SFP ports; IP Base Image
WS-C3750-48TS-E	48 10/100 ports + 4 SFP ports; IP Services Image
WS-C3750G-12S-S	12 SFP ports; IP Base Image
WS-C3750G-12S-E	12 SFP ports; IP Services Image
WS-C3750G-12S-SD	12 SFP ports; IP Base Image; DC power supply

Cisco Catalyst 3750 Series Products (with PoE)

Part Number	Description
WS-C3750G-24PS-S	24 10/100/1000T PoE ports + 4 SFP ports; IP Base Image
WS-C3750G-24PS-E	24 10/100/1000T PoE ports + 4 SFP ports; IP Services Image
WS-C3750G-48PS-S	48 10/100/1000T PoE ports + 4 SFP ports; IP Base Image
WS-C3750G-48PS-E	48 10/100/1000T PoE ports + 4 SFP ports; IP Services Image
WS-C3750-24PS-S	24 10/100 PoE ports + 2 SFP ports; IP Base Image
WS-C3750-24PS-E	24 10/100 PoE ports + 2 SFP ports; IP Services Image
WS-C3750-48PS-S	48 10/100 PoE ports + 4 SFP ports; IP Base Image
WS-C3750-48PS-E	48 10/100 PoE ports + 4 SFP ports; IP Base Image
WS-C3750G-24WS-S25	24 10/100/1000 ports + 2 SFP ports With support for up to 25 access points
WS-C3750G-24WS-S50	24 10/100/1000 ports + 2 SFP ports With support for up to 50 access points

Product Availability

Shipping worldwide, no restrictions

Learn More about Cisco Catalyst 3750 Series Switches

http://www.cisco.com/en/US/products/hw/switches/ps5023/index.html

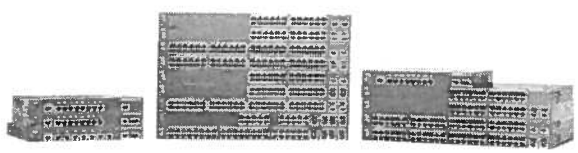
Cisco Catalyst 2960 Series Switches

The Cisco® Catalyst® 2960 Series Switches are standalone fixed-configuration switches offering Fast Ethernet and Gigabit Ethernet connectivity with LAN services for midmarket and branch office networks.

Cisco Catalyst 2960 Series Intelligent Ethernet switches are offered in two categories:

- Cisco Catalyst 2960 Series with LAN Base software (Figure 1)
- Cisco Catalyst 2960 Series with LAN Lite software

Figure 1. Cisco Catalyst 2960 Models with LAN Base Software



Cisco Catalyst 2960 Series Switches with LAN Base software deliver intelligent services for commercial and midsize enterprise wiring closets and branch offices. The LAN Base software supports enhanced integrated security, including Network Admission Control (NAC), advanced quality of service (QoS), availability, and scalable management to enable new converged applications.

Primary Benefits

- **Connectivity:** Fast Ethernet and Gigabit Ethernet connectivity in 8-port, 24-port, and 48-port configurations
- **Power over Ethernet (PoE):** 48 PoE ports, 24 full PoE ports and 24-ports (PoE supported on 8 ports) configurations
- **Advanced Services:** Layer 2 switching with intelligent Layer 2 through 4 services for the network edge such as voice, video, and wireless LAN
- Simplified installation, configuration and troubleshooting with ease of use capabilities such as Auto Smart Ports and DHCP Auto Install
- **Security:** Network security enabled through a wide range of authentication methods, data encryption technologies, and NAC based on users, ports, and MAC addresses
- **Advanced availability:** 802.1S/W enables standards-based fault tolerance, load balancing, and rapid recovery; FlexLinks provides sub-100-millisecond convergence; Per VLAN Spanning Tree Plus (PVST+) increases available bandwidth by allowing traffic on redundant links
- **QoS and Multicast:** Industry-leading mechanisms for marking, classification, and scheduling to deliver superior network performance
- Hardware-based multicast services for corporate communications, E-learning, IP video surveillance, high definition video, and distribution of data to desktops in a scalable, reliable and efficient manner
- AC power supply failure protection with external power supply using Cisco Redundant Power System 2300
- **Management:** Cisco Network Assistant simplifies configuration, upgrades, and troubleshooting; Express Setup is quick and easy using the webpage interface
- The ability to enhance sustainability, green IT, and reduce costs with Cisco EnergyWise
- Single IP address, SYSLOG, SNMP management for a stack of up to 16 switches
- Limited lifetime hardware warranty
- Software updates at no additional charge

Customers

The Cisco Catalyst 2960 switches with LAN Base software are for users who:

- Want to power PoE devices, including Cisco IP phones, wireless access points, or IP video cameras.
- Expect intelligent services for new converged applications for midmarket wiring closets and small branch offices
- Are interested in intelligent features and capabilities such as QoS, enhanced security, and availability
- Want to quickly deploy and easily manage their networks and are interested in ease of installation, configuration and troubleshooting

Cisco Catalyst 2960 switches with the LAN Lite software image (Figure 2) simplify the migration from nonintelligent hubs and unmanaged switches to a fully scalable managed network. The LAN Lite Cisco IOS® Software provides entry-level security, QoS, PoE, and availability capabilities while lowering the network total cost of ownership.

Figure 2 Cisco Catalyst 2960 Models with LAN Lite Software

Cisco Catalyst 2960 Series Switches

Primary Benefits

- Layer 2 Fast Ethernet switching in 8-port, 24-port, and 48-port configurations
- Power over Ethernet (PoE): 24 full PoE port and 24-port (PoE supported on 8 ports) configurations
- Security management through SSH, SSL, SNMPv3, and Network Admission Control enabled through 802.1x, MAC-Auth Bypass, and Port Security
- Availability: 802.1S/W enables standards-based fault tolerance, load balancing, and rapid recovery; PVST+ increases available bandwidth by allowing traffic on redundant links
- QoS: Traffic classification and shaping to prioritize various applications
- Management: Cisco IOS software based switch operation, Cisco Network Assistant support: Express Setup is quick and easy using the web page interface for network configuration
- Simplified installation, configuration and trouble-shooting with ease of use capabilities such as Auto Smart Ports and DHCP Auto Install
- Enhanced troubleshooting for link connectivity issues and cable diagnostics
- Single IP address, SYSLOG, SNMP management for a stack of up to 16 switches
- Limited lifetime hardware warranty
- Software updates available at no additional charge

Customers

The Cisco Catalyst 2960 switches with LAN Lite software are for users who:

- Are looking for basic connectivity with entry-level QoS, PoE, security, and availability
- Want to upgrade their network from hubs and older unmanaged switches for better performance and reliability
- Need to support new applications to provide real-time access to information
- Have limited IT staff and want to quickly deploy and easily manage their networks using a common network management platform
- Need to comply with new data security regulations
- Small and mid-size business customers who want to own and experience Cisco brand, reliability and support.

Ordering Information

Table 1. Cisco Catalyst 2960 Models with LAN Base Image

WS-C2960PD-8TT-L	8 10/100 with 1 10/100/1000 PoE input port
WS-C2960-8TC-L	8 10/100 and 1 dual-purpose uplink (10/100/1000BASE-T or SFP port); compact form factor
WS-C2960-24TT-L	24 10/100 and 2 10/100/1000
WS-C2960-24TC-L	24 10/100 and 2 dual-purpose uplinks
WS-C2960-24PC-L	24 10/100 PoE and 2 dual-purpose uplinks
WS-C2960-24LT-L	24 10/100 (PoE supported on 8 ports) and 2 10/100/1000
WS-C2960-48TT-L	48 10/100 and 2 10/100/100
WS-C2960-48TC-L	48 10/100 and 2 dual-purpose uplinks
WS-C2960G-8TC-L	7 10/100/1000 and 1 dual-purpose uplink, compact form factor
WS-C2960G-24TC-L	20 10/100/1000 and 4 dual-purpose uplinks
WS-C2960G-48TC-L	44 10/100/1000 and 4 dual-purpose uplinks

Table 2. Cisco Catalyst 2960 Models with LAN Lite image

WS- C2960-8TC-S	8 10/100 and 1 dual-purpose uplink
WS-C2960-24-S	24 10/100 ports
WS-C2960-24TC-S	24 10/100 and 2 dual-purpose uplinks
WS-2960-24PC-S	24 10/100 PoE ports and 2 dual-purpose uplinks
WS-2960-24LC-S	24 10/100 (8 port PoE) and 2 dual-purpose uplinks
WS-C2960-48TT-S	48 10/100 and 2 10/100/1000
WS-C2960-48TC-S	48 10/100 and 2 dual-purpose uplinks
WS-2960-48PST-S	48 10/100 POE ports and 2 10/100/1000 and 2 SFP uplinks

Pricing Information

For pricing information, visit https://tools.cisco.com/qtc/pricing/MainServlet.

Learn More About Cisco Catalyst 2960 Series Switches

For more information, visit http://www.cisco.com/go/catalyst2960.

Data Sheet

Cisco Aironet **Power Injector**

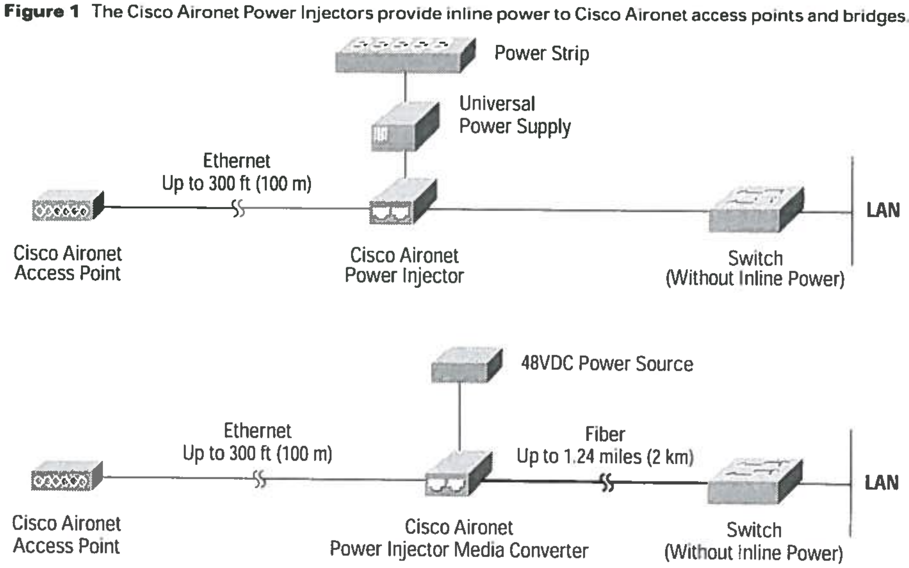
Cisco Aironet® Power Injector products increase the deployment flexibility of Cisco Aironet wireless access points and bridges by providing an alternative powering option to local power, inline power-capable multiport switches, and multiport power patch panels.

The single-port Cisco Aironet power injectors combine 48-VDC power with the data signal, sending both to the Cisco Aironet access point or bridge. Cisco Aironet 350 Series access points and bridges include an integrated power supply and injector (AIR-PWRINJ). The power injector for Cisco Aironet 1100 and 1200 series access points (AIR-PWRINJ3) works with the power supply provided with the access point.

The Cisco Aironet Power Injector Media Converter (AIR-PWRINJ-FIB) converts fiber media to Category 5 media and combines the resulting data signal with power for delivery to the access point or bridge. The power injector media converter accepts 48 VDC power from either the barrel connector of the local power supply or an alternative 48 VDC power source. When powered by an alternate 48 VDC power source connected using the provided power supply pigtail, the Power Injector Media Converter is UL2043 certified and suitable for installation in environmental air spaces. The local power supply is provided with the Cisco Aironet 1100 and 1200 series access points, while applicable local power supplies for the Cisco Aironet 350 Series access points and bridges are available separately.

Figure 1 illustrates possible deployment scenarios for the Power Injector and Power Injector Media Converter.

Figure 1 The Cisco Aironet Power Injectors provide inline power to Cisco Aironet access points and bridges.



The power injectors provide up to 15 watts (depending on the Cisco power supply model) over the unused wire pairs of a Category 5 Ethernet cable, supplying enough power to provide for up to a 100-meter cable run.

Product Specifications

Table 1 Specifications of Cisco Aironet Power Injector

Description	Cisco Aironet Power Injector Media Converter	Cisco Aironet Power Injector for 1100, 1200 Series	350 Series Single Port Power Injector
Part Number	AIR-PWRINJ-FIB	AIR-PWRINJ3	AIR-PWRINJ
LAN Connection	Max Fiber cable length: 2 km Type: MT-RJ (multimode fiber) Label: 100BASE-FX To Network Speed: 100 Mbps Duplex: Full	Max Cat 5 cable length: 100 m from switch to device Type: RJ-45 Label: 10/100BASE-TX To Network	Max Cat 5 cable length: 100 m Type: RJ-45 Label: To Network
Device Connection	Max Cat 5 cable length: 100 m Type: RJ-45 Label: 100BASE-TX To Device Speed: 100 Mbps Duplex: Full Auto MDI-X	Max Cat 5 cable length: 100 m from switch to device Type: RJ-45 Label: 10/100BASE-TX To Device	Max Cat 5 cable length: 100 m Type: RJ-45 Label: To AP/Bridge
LEDs	2 - Power Status Uplink Connectivity	2 - Power Status Device Connectivity	1 - Power Status and Device Connectivity
Interlockable	Yes	Yes	No
Wired pairs used	Injects power into two unused pairs in the Category 5 cable: 4 and 5 (negative) and 7 and 8 (positive)	Injects power into two unused pairs in the Category 5 cable: 4 and 5 (negative) and 7 and 8 (positive)	Injects power into two unused pairs in the Category 5 cable: 4 and 5 (negative) and 7 and 8 (positive)
Electrical	Input voltage: 48 VDC (supplied by external power supply) Output voltage: 48 VDC	Input voltage: 48 VDC (supplied by external power supply) Output voltage: 48 VDC	Input voltage: 48 VDC (supplied by external power supply) Output voltage: 48 VDC
	Input current -.380A Output current -.320A	Input current -.380A Output current -.320A	Input current -.200A Output current -.125A
Power supply requirements	Cisco Aironet power supply or alternative DC power supply[1], 48 VDC 5%, 18 watts	Cisco Aironet power supply, 48 VDC 5%, 18 watts	Cisco Aironet power supply, 48 VDC 5%, 9 watts
Dimensions	5.49 x 2.14 x 1.36 in. (13.93 x 5.43 x 3.45 cm)	5.49 x 2.14 x 1.36 in. (13.93 x 5.43 x 3.45 cm)	1 x 1.85 x 3.3 in. (2.54 x 4.70 x 8.38 cm)
Weight	4 oz.	4 oz.	3 oz.

Table 1 Specifications of Cisco Aironet Power Injector (Continued)

Description	Cisco Aironet Power Injector Media Converter	Cisco Aironet Power Injector for 1100, 1200 Series	350 Series Single Port Power Injector
Environmental	32 to 131 F (0 to 55 C) 0–90% humidity (noncondensing) UL 2043 certified for environmental air space installations when using supplied power supply pigtail[1]	32 to 113 F (0 to 45 C) 10–90% humidity (noncondensing)	32 to 104 F (0 to 40 C) 10–90% humidity (noncondensing)

1. Note that when using the provided power supply pigtail, connect it to the power source in accordance with local and national codes such as the National Electrical Code NFPA70, the Canadian Electrical Code, Part I, C22, or IEC 364, Part 1 through 7.

Ordering Guide

For the Cisco Aironet 350 Series Access Point and bridges, the Cisco Aironet Power Injector (part number AIR-PWRINJ) is included with your product. For the Cisco Aironet 1100 and 1200 Series Access Points, the Cisco Aironet Power Injector (part number AIR-PWRINJ3) can be configured to your order. Alternatively, for all Cisco Aironet access points and bridges, the appropriate Cisco Aironet power injector, including the Cisco Aironet Power Injector Media Converter (part number AIR-PWRINJ-FIB) can be ordered separately as a spare part.

Identify your access point or bridge and select the power injector and power supply from Table 2.

Table 2 Cisco Aironet Power Injector and Supply Options[1]

Product	Supported Power Injector	External Power Supply
Cisco Aironet 350 Series Access Points and Bridges	AIR-PWRINJ= [2]	None Required [2]
	AIR-PWRINJ-FIB=	AIR-PWR-A= [3]
Cisco Aironet 1100 Series Access Point	AIR-PWRINJ3=	AIR-PWR-A=
	AIR-PWRINJ-FIB=	AIR-PWR-A=, or external 48 VDC 5%
Cisco Aironet 1200 Series Access Point	AIR-PWRINJ3=	AIR-PWR-A=
	AIR-PWRINJ-FIB=	AIR-PWR-A=, or external 48 VDC 5%

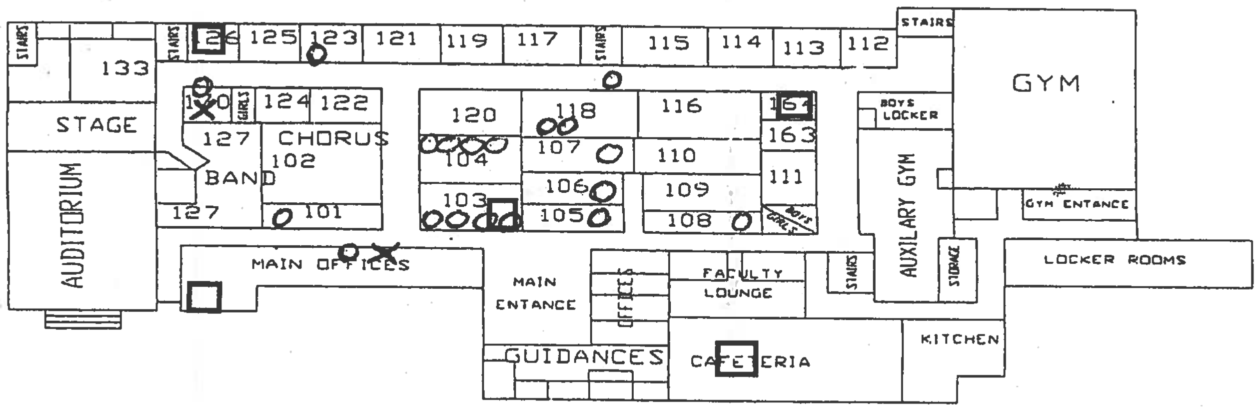
1. Note that the Cisco Aironet 1400 Series Wireless Bridge is supplied with the Power Injector LR, which is also available as a spare part (part number AIR-PWRINJ-BLR1=). The Power Injector LR only supports the 1400 Series Bridge. Please see the Cisco Aironet 1400 Series Wireless Bridge data sheet for more information on this power injector.
2. The Cisco Aironet Power Injector (part number AIR-PWRINJ=) is preassembled with the power supply. No additional power supply is required.
3. The 350 Series access points and bridges do not come with a standalone power supply. To use the power injector media converter (part number AIR-PWRINJ-FIB=) with these devices, you will need to procure the power supply with the part number AIR-PWR-A=.

Cisco Aironet 1100 and 1200 series power injectors can be used with Cisco Aironet 350 Series devices, but because of the higher current demands of the Cisco Aironet 1100 and 1200 series access points, the Cisco Aironet 350 Series Power Injector cannot be used with the Cisco Aironet 1100 and 1200 series devices.

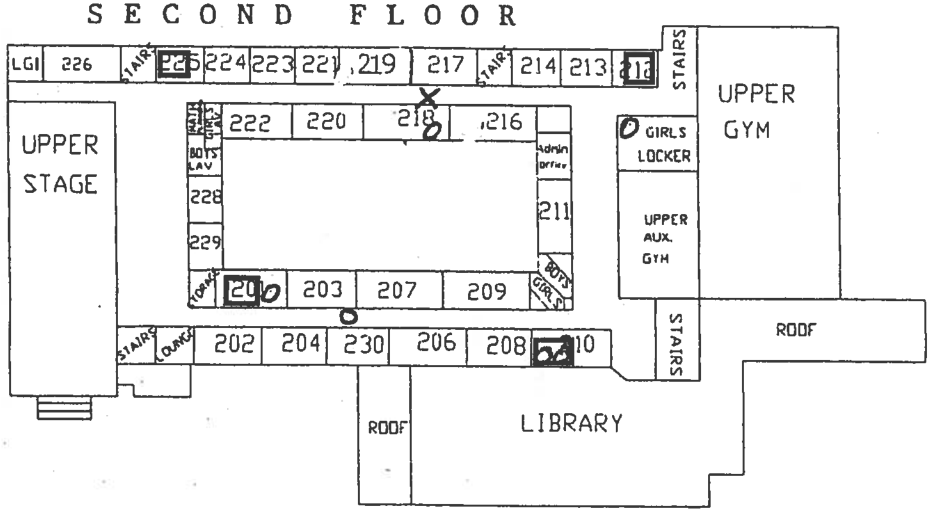
X = ACCESS POINTS

O = SWITCHES

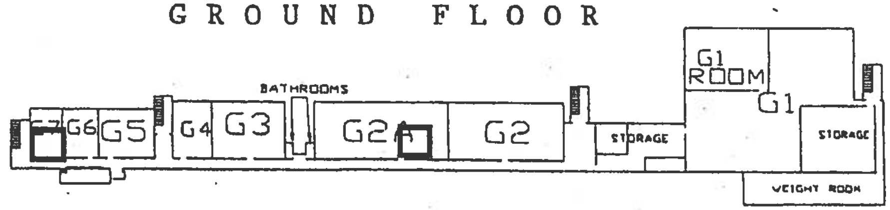
FIRST FLOOR



SECOND FLOOR



GROUND FLOOR

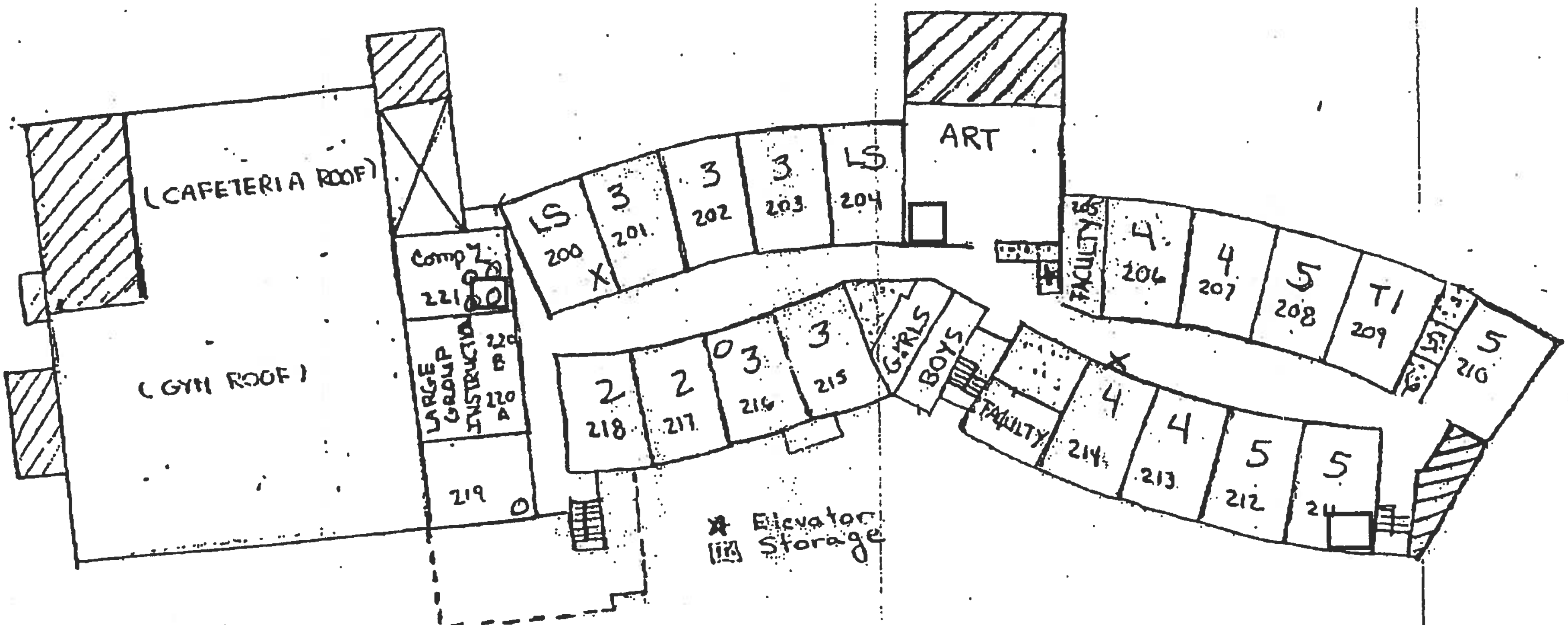


Designed by Kayla Polick

THOMAS JEFFERSON

X = *ACCESS POINTS*

O = SWITCHES

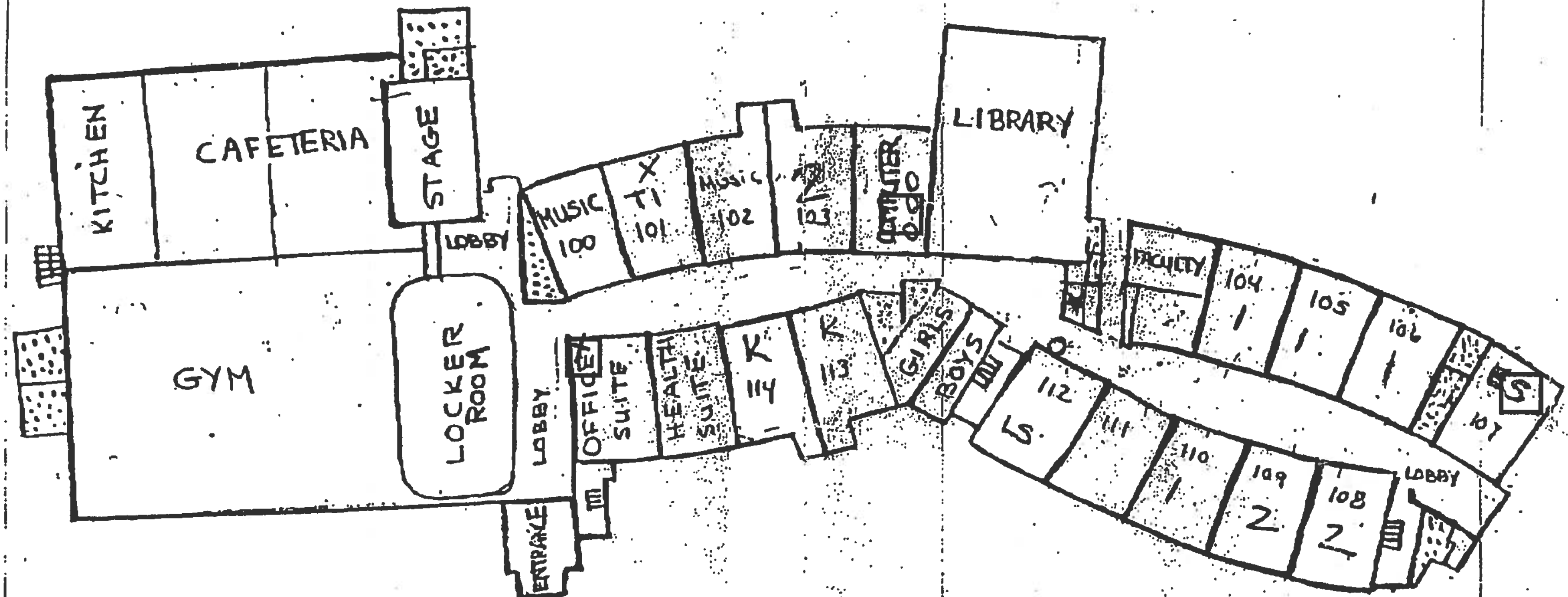


JEFFERSON

2006/DEC/13/WED 01:19 PM JEFFERSON ELE. FAX No. 412-655-4973 P. 002

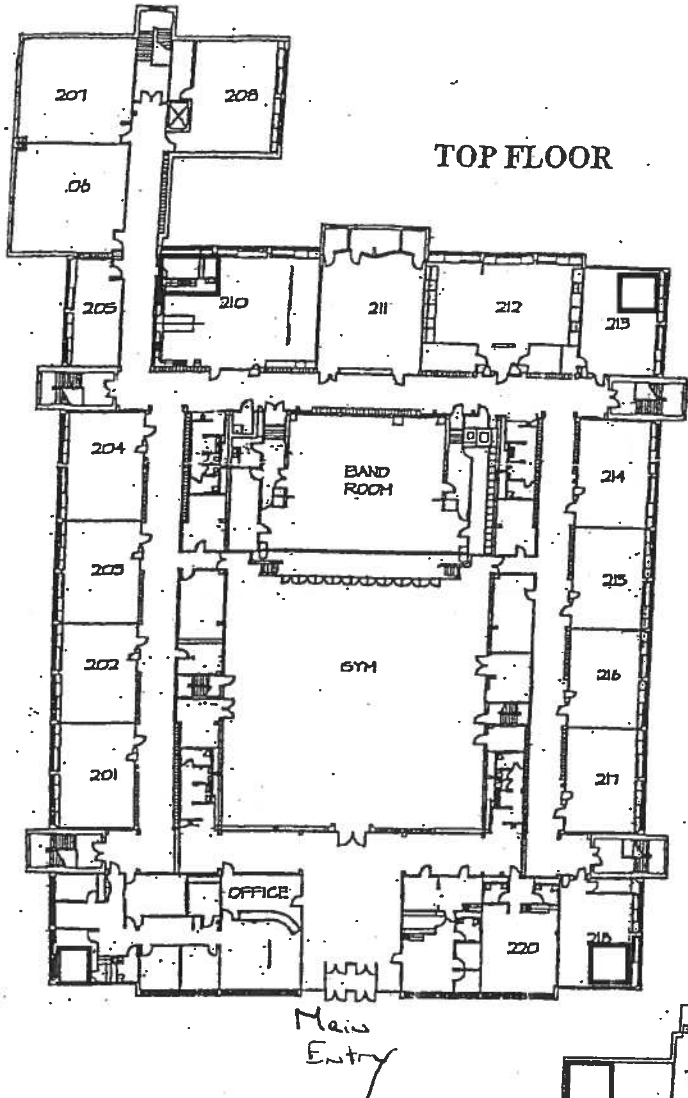
X = ACCESS POINTS

O = SWITCHES

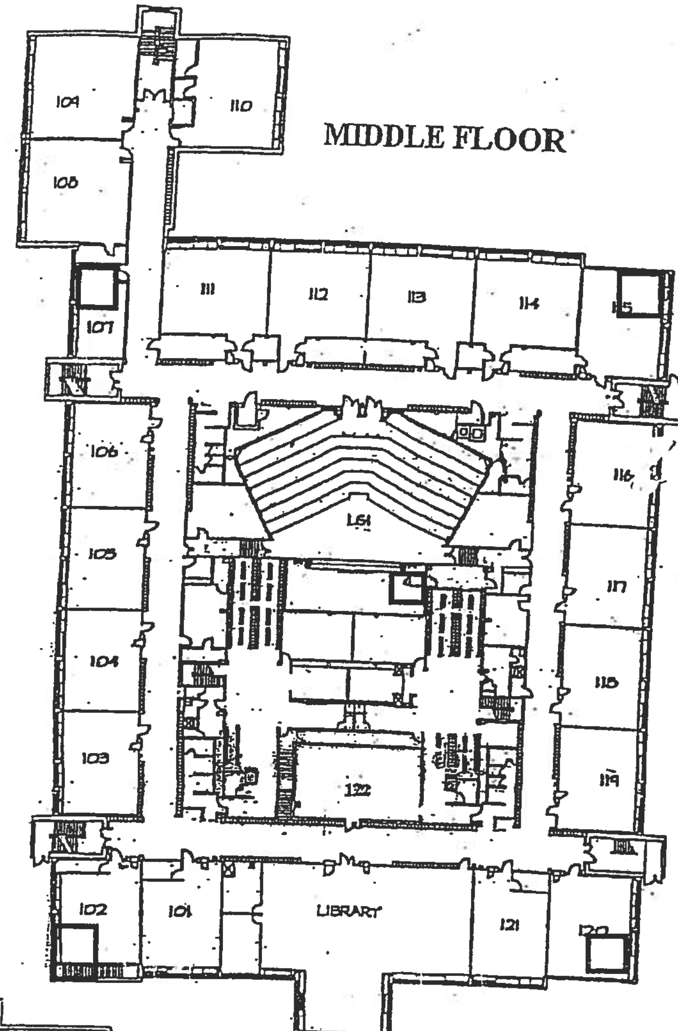


JEFFERSON

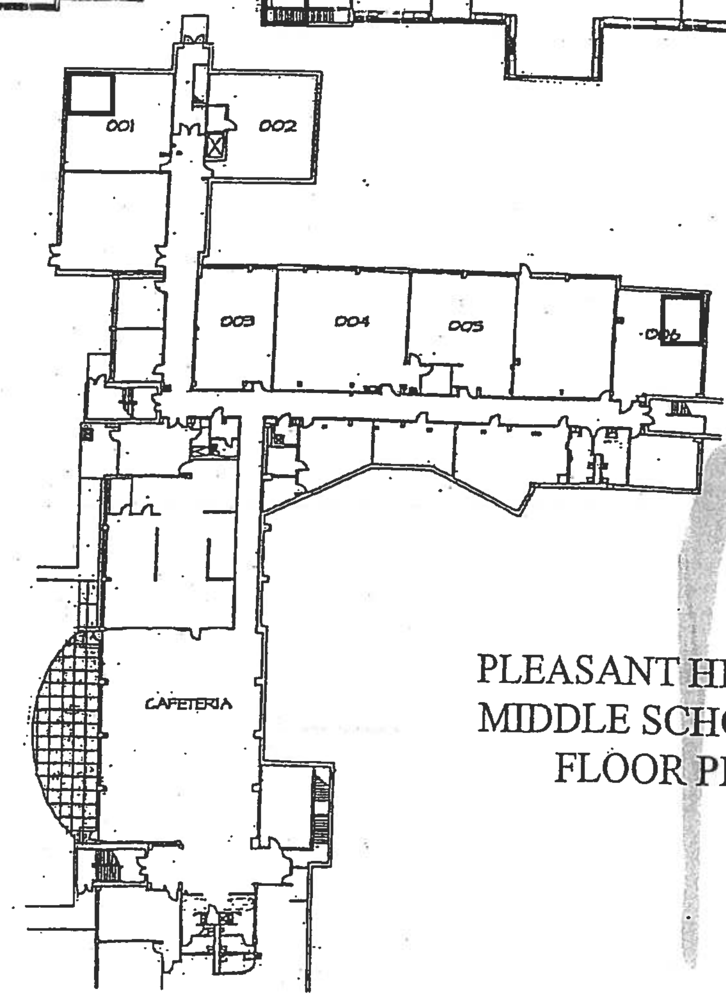
TOP FLOOR



MIDDLE FLOOR



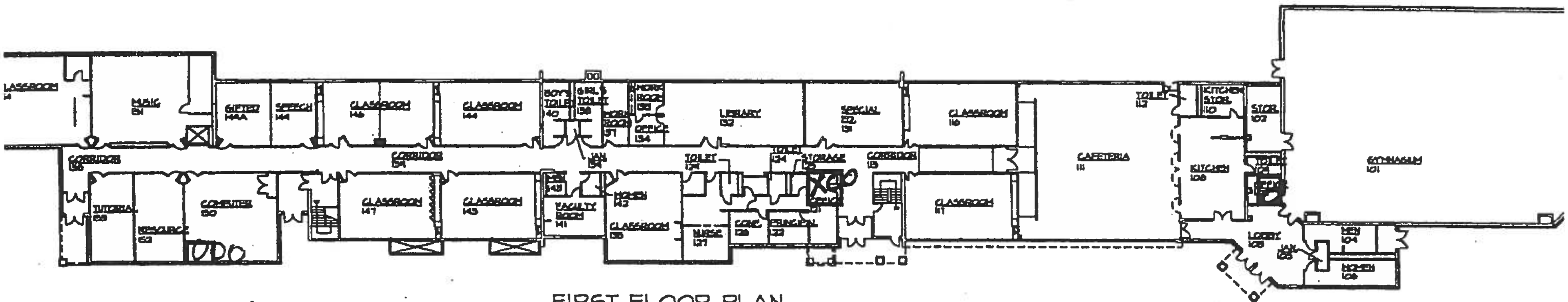
BOTTOM FLOOR



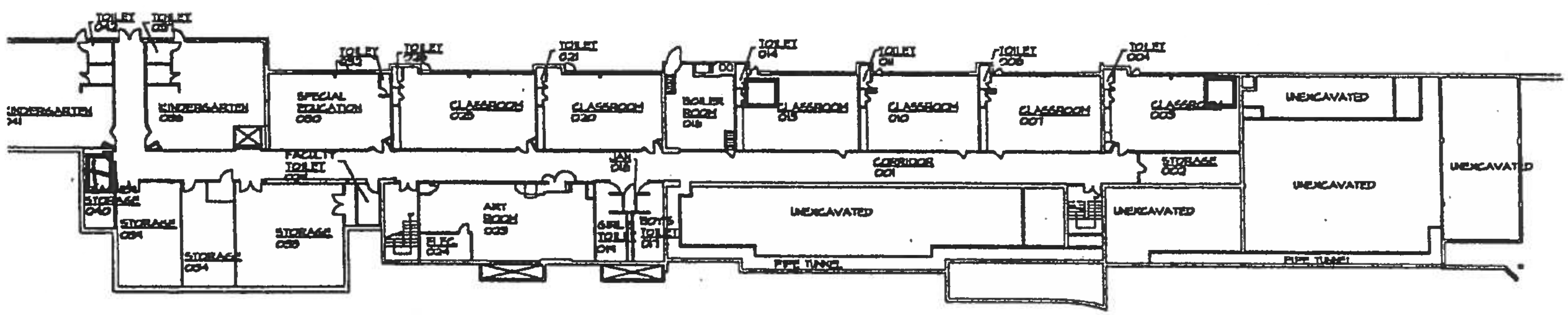
PLEASANT HILLS
MIDDLE SCHOOL
FLOOR PLAN

X = ACCESS POINTS

O = SWITCHES

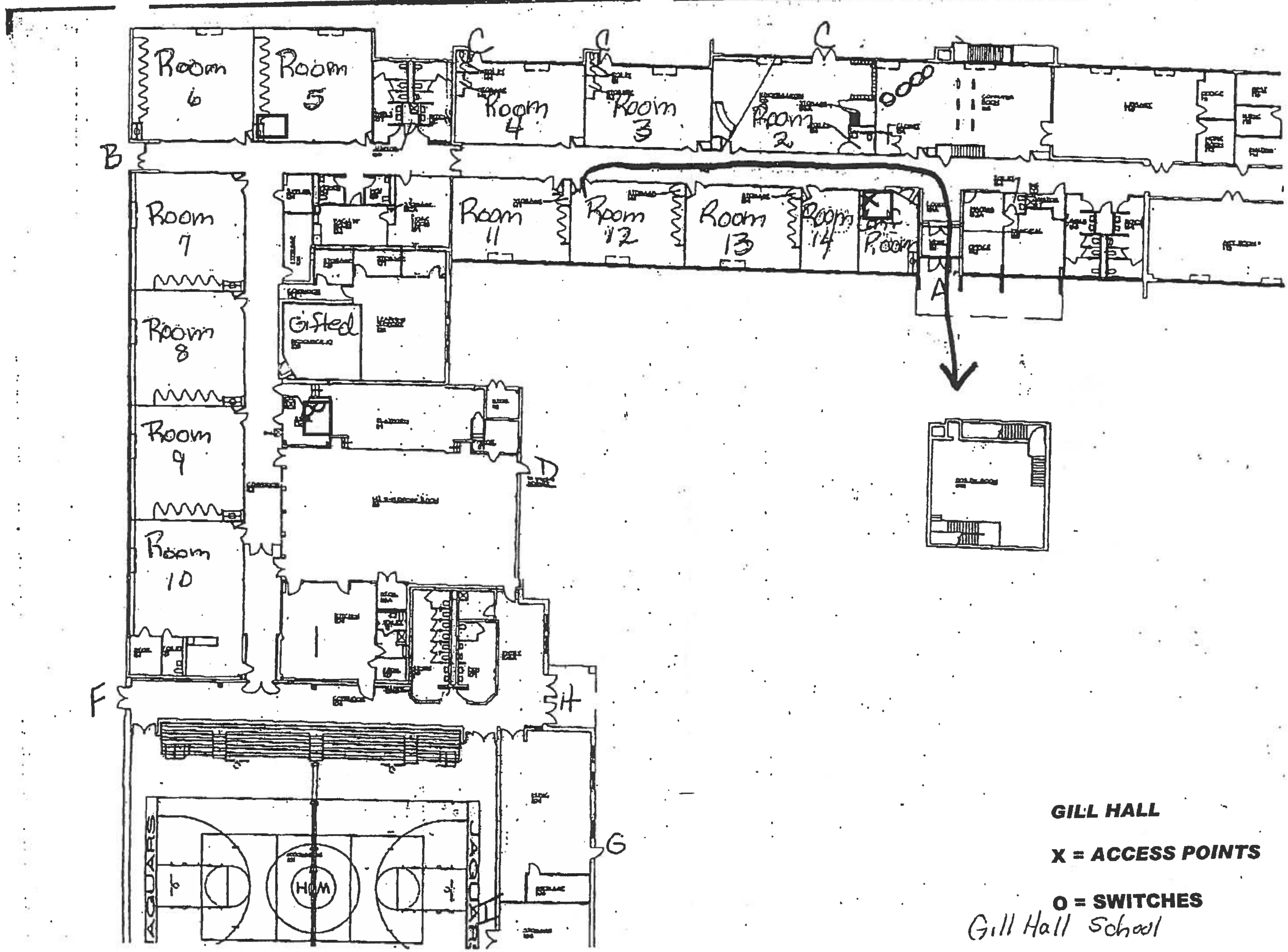


FIRST FLOOR PLAN



GROUND FLOOR PLAN

McCLELLAN ELEMENTARY SCHOC



GILL HALL

X = ACCESS POINTS

O = SWITCHES

Gill Hall School

West Jefferson Hills School District

Priority Report
Existing Facilities Condition Assessment

JC PIERCE llc

Architecture

Engineering

Strategic Master Planning

Construction Management

August 15, 2013

T A B L E O F **C O N T E N T S**

P a g e

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West Jefferson Hills School District –Master Plan Study

FACILITY EVALUATION REPORT

EXECUTIVE SUMMARY

The West Jefferson Hills School District has asked JC Pierce, llc, Architects and Construction Managers, to help facilitate a District Wide – Master Plan Study. This report contains the analysis of our building review and evaluation of the West Jefferson Hills School District Facilities. The methodology used to evaluate the facilities included on-site visual examination of: the building sites; structural integrity and thermal envelope; Interior environment and finishes; building systems including suitability and life expectancy of mechanical, electrical, plumbing, and telecommunication systems; evaluation of building scheduled spaces; life safety; and compliance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

For more than a month, JC Pierce's architects and consulting engineers, in conjunction with the West Jefferson Hill's, Director of Facilities, custodians, District Administrators and staff, had made visits to the district facilities in an effort to evaluate the condition and viability of each respective building.

The goal of this report is to bring to the Board's attention any issues related to facility conditions that should be addressed in the upcoming building program(s). The report is organized as follows: For each building we have summarized the issues we discovered, and have broken them down into five basic categories:

- **Site Summary**
  - Site Grading and Drainage
  - Pavement and Sidewalk
  - Foundation and Geotechnical
- **Building Summary**
  - Exterior Building Evaluation
  - Interior Building Evaluation
  - Accessibility
- **Mechanical Summary**
  - Heating, Ventilating, and Air Conditioning (HVAC) Systems
  - Central Cooling Plant
  - Central Heating Plant
  - Exhaust Systems
- **Plumbing Summary**
  - Plumbing and Fire Protection Systems
- **Electrical Summary**
  - Service Entrance
  - Emergency Power
  - Fire Alarm System
  - Lighting

We recognize that due to budgetary constraints it might be impractical and impossible to upgrade all of the remaining facilities in the immediate future. The Board also has other priorities to which to assign its capital improvement dollars. As such, we have prioritized what we believe to be the most critical facility issues. These issues are identified under each school as “Issues of Immediate Concern”, and are further prioritized as:

- **High Priority:** Issues that if not addressed pose a significant level of safety hazard, liability, structural failure, or threat to the integrity of the building envelope. Also categorized as “High Priority” are issues that will become more costly to remediate as time passes, as well as issues that could generate a significant cost impact through consequential damage – such as excess moisture that could cause indoor air quality issues.

- **Medium Priority:** Issues that should be addressed because they currently cause the District to incur cost or inconvenience. Also included in this category are issues that have the potential to degrade the condition of the building over time.

If the District does not immediately enter into a capital building campaign; we recommend that the issues identified as “High Priority” are addressed by the District as targeted projects as soon as the budget for this work can be put in place. We recommend that the District evaluate each “Medium Priority” issue on a case-by-case basis to determine the appropriate time to address the concern.

All other issues can be considered Low Priority. These issues relate mostly to interior finishes and programmatic elements. We do not mean to minimize the importance of these issues, as some are quite significant. Given the financial constraints of the District, and the District’s other pressing educational and space need priorities, it is our opinion that these issues can be deferred in the short term for the following reasons:

- The cost to remediate these issues will likely not increase beyond the rate of inflation due to further deterioration.
- Continued degradation, or even failure, of the system or component will not likely result in a safety hazard or severe operational inconvenience on the part of the District.
- Aesthetic and related quality-of-life concerns may not require immediate attention.

In our opinion, the above issues should be addressed in conjunction with any future building project associated with each individual facility. It is difficult to prioritize these issues since there are district-wide educational programming decisions that need to be made in conjunction with these facility assessments.

The facility evaluations within this report are intended to be the basis of identifying and prioritizing future building programs. It is expected that the Board of Directors, District Administration, and Other District Stakeholders will be able to use these facility evaluations to better understand the general condition of each respective facility. Detailed cost estimating is not a part of this District Facility Evaluation; rather this report forms the foundation for the magnitude of cost estimating, which are included as part of the District Option(s) portions of this Master-Plan Study. The District Options for the Master Plan Study include the potential cost impact of addressing all of each site’s recommended next steps.

THOMAS JEFFERSON HIGH SCHOOL CAMPUS

310 Old Clairton Road
Jefferson Hills, PA 15025
Principal: Mr. Timothy W. Haselhoff
Enrollment: +/- 905

Issues of Immediate Concern at the Thomas Jefferson High School:

- **High Priority**

Issue No.1:

- The ballasted and fully-adhered EPDM roofing systems are beyond their effective useful life.

Consequence:

- Water infiltration into the buildings can cause superficial damage to interior finishes; prolonged leaking can cause damage to the building structure and create poor indoor air quality concerns.

Recommended Next Step:

- The roofing systems should be replaced as required.

Issue No.2:

- The building envelope is showing signs of deterioration and is contributing to the collection of water in the building interior; both from moisture infiltration and condensation from the "heat sink" effect of the exposed structural system.

Consequence:

- Moisture collection and infiltration of the building interior accelerates the deterioration of the building structure and can contribute to poor indoor air quality.

Recommended Next Step:

- Investigate the causes of the building envelope failures and make the necessary corrections including but not limited to the pointing of bricks, replacement of EFIS, replacement of steel lintels, replacement of windows and storefront systems.

Issue No.3:

- The existing heating system is beyond its serviceable life.

Consequence:

- The heating plant could fail causing a complete shutdown of the building systems.

Recommended Next Step:

- Recommendation for the heating system would be to replace the boiler plant and pumps.

Issue No.4:

- There are a variety of accessibility issues that do not meet with Americans with Disabilities Act Accessibility Guidelines (ADAAG).

Consequence:

- Persons with physical challenges are not provided with equal access to all areas of the building.

Recommended Next Step:

- Perform a comprehensive study to address accessibility and code related deficiencies and make improvements as required.

Issue No.5:

- Building HVAC controls are the original pneumatic controls. The pneumatic controls are beyond their service life expectancy, and should be replaced.

Consequence:

- The pneumatic controls are inefficient and at this age, prone to service breakdowns.

Recommended Next Step:

- Provisions should be made to replace the pneumatic controls in their entirety with full DDC controls; and upgrade to a WEB based HVAC system so that maintenance staff at each school can access units schedule and set points via a laptop computer.

Issue No.6:

- The existing plumbing system is beyond its serviceable life.

Consequence:

- The plumbing system could fail causing a complete shutdown of the building systems.

Recommended Next Step:

- Recommendation for the plumbing system to be replaced in its' entirety.

Issue No.7:

- There is a lack of sufficient combustion air for the boiler room.

Consequence:

- Lack of adequate makeup combustion air poses safety hazards and is against code.

Recommended Next Step:

- Replace/ upgrade the boiler room makeup louvers.

Issue No.8:

- There is a lack of a sufficient exhaust/ ventilation system for the Tech-Ed Lab.

Consequence:

- Lack of adequate exhaust/ ventilation poses safety hazards and is against code.

Recommended Next Step:

- Install proper ventilation and exhaust system in the Tech-Ed Lab.

Issue No.9:

- There is insufficient access/ clearances for much of the HVAC equipment and electrical panels/ equipment throughout the building; which is required for maintenance and/or code.

Consequence:

- Lack of adequate access/ clearances at mechanical equipment and electrical panels/ equipment poses a safety hazard and is against code.

Recommended Next Step:

- Any substantial project at the High School would require creating proper clearances for the mechanical equipment and electrical panels/ equipment.

Issue No.10:

- Most all mechanical/ electric rooms are being used for storage, which includes combustible materials. Mechanical rooms with air handlers, boilers, compressors and other devices should be kept clear of all miscellaneous storage items and only used to store items directly used by the equipment such as air filters, drive belts, and similar items. (IFC Section 315.2.3).

Consequence:

- Storage in any of the mechanical and/or electrical room(s) poses a safety hazard and is against code.

Recommended Next Step:

- Remove storage from the respective mechanical and/or electrical rooms.

Issue No.11:

- The building domestic hot water boiler and storage tank are beyond serviceable life; it is possible that this unit is original to the building. It is reported that the deterioration has caused rust in the water.

Consequence:

- The school cannot operate without hot water; loss of hot water could lead to a temporary shut-down of the building.

Recommended Next Step:

- Replace the building domestic hot water delivery/ storage system.

Issue No.12:

- Most major electrical systems are beyond industry recommended service life, with some major systems approaching three times recommended service life.

Consequence:

- Replacement parts will continue to become more costly to obtain and systems failure can be expected to increase in number. In particular, the T12 lighting will become cost prohibitive to maintain.

Recommended Next Step:

- Replacement/ upgrade of the building electrical system(s).

Issue No.13:

- The electrical distribution system is undersized and at the end of its useful life.

Consequence:

- Low efficiency and increased level of electrical service interruptions.

Recommended Next Step:

- Replace the Electrical Distribution system to meet the current/ future demands.

Issue No.14:

- Existing Panel boards are at the end of their useful life.

Consequence:

- Low efficiency and increased level of electrical service interruptions.

Recommended Next Step:

- Replace the existing panel boards which have not been upgraded.

Issue No.15:

- The fire alarm system does not meet current life safety code.

Consequence:

- In an emergency the building occupants could be at a disadvantage.

Recommended Next Step:

- Replace the fire alarm system to meet current Life Safety Codes.

Issue No.16:

- The Emergency Lighting and [Generator] do not meet current life safety code.

Consequence:

- In an emergency the building occupants could be at a disadvantage.

Recommended Next Step:

- Replace the Emergency Lighting, and Generator to meet the current Life Safety Code.

- **Medium Priority**

Issue No.1:

- There are not adequate parking spots, seating areas or toilet facilities for persons with disabilities. There is not an accessible route between every level of each respective floor.

Consequence:

- Physically challenged persons have difficulty attending classes and/or events.

Recommended Next Step:

- Create additional accessible seating areas; add compliant vertical circulation; and add accessible toilet facilities.

Issue No.2:

- Multiple building entries make a secure facility difficult to maintain.

Consequence:

- The lack of a secure facility encourages deviant and unlawful activity.

Recommended Next Step:

- Implement a student and faculty identification badge program. Institute an improved policy of perimeter campus and building security.

Issue No.3:

- Majority of the roof exhaust fans, ductwork, and gravity intake vents, etc. are rusted and in disrepair. It appears that two exhaust fans have never been wired for operation; which is against code.

Consequence:

- Any associated disrepair with rooftop exhaust fans, ductwork, and gravity intake vents, etc. can lead to building decay and/or health and safety issues due to water infiltration, poor ventilation, or the infestation of the building by pest such as birds, rodents, and/or bats.

Recommended Next Step:

- Replacement or repair of all the exterior rooftop exhaust fans, ductwork, and gravity intake vents, etc.

Issue No.4:

- Exhaust fans from chemistry lab have been modified resulting in a convoluted and inefficient ductwork systems.

Consequence:

- Inefficient and/or modified lab exhaust vents and/or hoods can cause back drafts or not operate to the required capture velocity. Poorly functioning lab exhaust can allow combustion and/or chemically tainted air to remain in the classroom which can pose as a health/safety issue.

Recommended Next Step:

- All laboratory hoods need to be checked and tested to insure proper functioning.

Issue No.5:

- The condensing unit for fan system S-15 which provides the bulk of the high school's air-conditioning on the first floor interior, only runs at 50% of capacity because one of the compressors is out of service.

Consequence:

- The condensing unit working at 50% is inefficient, costs more to operate, can cause premature wear and tear on the mechanical system; and can fail to cool the building as required (particularly during peak demand periods.

Recommended Next Step:

- Evaluation and repair or replacement of the condensing unit.

Issue No.6:

- The auditorium HVAC units reside within the auditorium space.

Consequence:

- Mechanical units of this magnitude cannot be operated during events due to strong vibrations and noise. The lack of conditioning and required ventilation is uncomfortable and poses health/safety issues. The units must be operated during events in order to meet code.

Recommended Next Step:

- Removal, isolation and/or replacement of the auditorium HVAC units.

Issue No.7:

- Automated lighting control was not present. An automated lighting control system should be integrated into future upgrades.

Consequence:

- Currently, without automated lighting controls the building operates inefficiently and does not meet the current energy code.

Recommended Next Step:

- Replacement/ upgrade of the entire building lighting control system(s).

Issue No.8:

- The bleachers in the Gymnasium present ongoing maintenance issues and do not comply with current building codes.

Consequence:

- Continued maintenance and the required modifications as required for code compliance, are cost prohibitive.

Recommended Next Step:

- Replacement of the Gymnasium bleachers is recommended in lieu of renovating the existing bleachers.

- **Low Priority**
  - All remaining issues in this evaluation can be considered to be low priority.

THOMAS JEFFERSON STADIUM:
Field House, Press Box, and Concession Stand

310 Old Clairton Road

Jefferson Hills, PA 15025

Issues of Immediate Concern at the Thomas Jefferson Stadium:

- **High Priority**

Issue No.1:

- There is visible water infiltration along the walls of the Field House basement/ stairs.

Consequence:

- Ongoing water infiltration can lead to potential health issues (potential for mold) and possible structural damage.

Recommended Next Step:

- Monitor water infiltration as required to determine the source and to address/resolve the issue accordingly.

Issue No.2:

- The Press Box Technology Systems are outdated.

Consequence:

- The outdated Technology Systems result in limitations to performance and function.

Recommended Next Step:

- Telecommunication and Technology were evaluated as part of a District-Wide Technology Feasibility Study; The District is currently implementing Phase I which upgrades the District Administration Office Building and Thomas Jefferson High School (Appendix). [Note: Fiber optic cable was extended from the High School during the summer of 2012 technology project].

Issue No.3:

- Open circuit breaker slots were observed in unlocked circuit panel boxes in the Press Box.

Consequence:

- Where electrical circuit breakers are not installed and the factory metal blank has been removed, a hazard exists due to the exposed bus work.

Recommended Next Step:

- Blank inserts should be installed anywhere a circuit panel has open spaces

Issue No.4:

- The main electrical service at the field house is installed in a "tight" space.

Consequence:

- When proper clearances are not maintained, any required maintenance can be hazardous to perform.

Recommended Next Step:

- Procedures should be established for servicing this area. No maintenance equipment should be stored in front of electrical panels (in general).

Issue No.5:

- The Press Box stair's treated wood support posts are not anchored into the ground and sit flush with the concrete. The stairs are not anchored at the top to the Press Box.

Consequence:

- Without proper anchoring, the stairs can be unstable; ground moisture and salt from winter maintenance will contribute to the premature decay of the wooden support posts.

Recommended Next Step:

- Retrofit the stair post with the proper raised anchors; mechanically fasten and anchor the upper portion of the stairs to the Press Box.

- **Medium Priority**

~~**Issue No.1:**~~ [Note: Turf was replaced the Summer of 2013.]

- ~~The Artificial Turf System is showing signs of deterioration from normal wear over its ten years of use.~~

~~**Consequence:**~~

- ~~Continued deterioration of the Artificial Turf System has the potential to become a safety concern for student athletes.~~

~~**Recommended Next Step:**~~

- ~~Replacement of the Artificial Turf System is recommended, pending decisions made regarding other priorities as noted in this study.~~

Issue No.2:

- The Synthetic Running Track Surface is showing signs of deterioration from normal wear over its ten years of use. It has been determined that there is sub-surface water infiltrating the asphalt base.

Consequence:

- Continued deterioration of the Synthetic Running Track Surface has the potential to become a safety concern for student athletes. Water infiltration into the sub-base causes the track to delaminate/ blister from the asphalt base.

Recommended Next Step:

- Investigation into the sub-base water infiltration is required; once the water infiltration is remediated; the asphalt base should be repaired and new running track surface installed. [Remediation of sub-base water infiltration and track replacement scheduled for Summer 2014].

Issue No.3:

- The perimeter drainage system around the Track/Field is in need of improvements.

Consequence:

- A proper perimeter drainage system is essential in the performance and maintenance of the Track/Field conditions.

Recommended Next Step:

- A complete evaluation of the perimeter drainage system is required to determine the necessary improvements, and should be performed in conjunction with replacement of the Synthetic Running Track Surface, pending decisions made regarding other priorities as noted in this study.

Issue No.4:

- When the concession building is closed but the internal food and beverage cooler/ freezers are in operation, the equipment heat rejection raises the internal ambient temperature to excessive levels; particularly on hot summer days. There is an existing small exhaust fan but no corresponding makeup air louver so the fan is not very effective. The fan is also on a spring-wound hand timer.

Consequence:

- A high internal temperature decreases the food and beverage cooler/ freezer's efficiency and will eventually shorten their equipment life.

Recommended Next Step:

- Install a large makeup air louver and motorized damper. Place the existing exhaust fan and motorized damper on a thermostat set at approximately 80 deg. This will automatically run the ventilation whenever internal ambient temperature rises.

- **Low Priority**

  - All remaining issues in this evaluation can be considered to be low priority.

PLEASANT HILLS MIDDLE SCHOOL

404 Old Clairton Road
Pleasant Hills, PA 15236-4398
Principal: Mr. Daniel Como
Enrollment +/- 664

Issues of Immediate Concern at the Pleasant Hills Middle School:

- **High Priority**

Issue No.1: [This issue was resolved during the Summer of 2013.]

- ~~Flush floor receptacles in the lab classrooms allow water and/or debris inside of the receptacles when scrubbing. In one instance, a flame was observed "shooting" out of a receptacle during scrub water operations. This hazard should be addressed. Note: This water/ debris ingress is indicative of receptacles that do not meet present codes.~~

~~**Consequence:**~~

- ~~Water infiltration into the floor electrical boxes poses a direct hazard to the building and occupant safety.~~

~~**Recommended Next Step:**~~

- ~~Eliminate or replace the non-compliant floor boxes with sealed code complaint floor boxes.~~

Issue No.2:

- Telephone service entrance conduits introduce water into the electrical service room (4160 VAC present in the electrical service room).

Consequence:

- The introduction of water into the electrical room poses an electrocution and/or fire hazard to the building and/or occupants.

Recommended Next Step:

- Recommendation for source of the water infiltration to be rectified/ repaired.

Issue No.3:

- Roof service access ladder exceeds the allowable code limits for enclosure and fall protection.

Consequence:

- During roof and/or rooftop equipment maintenance, personnel can slip and fall causing injury and/or death.

Recommended Next Step:

- Replacement and/or retrofit of the existing roof access ladder to met current safety codes.

Issue No.4:

- The front concrete retaining wall is spalling and showing deterioration from what appears to be moisture infiltration.

Consequence:

- Deterioration of cracking and spalling concrete is a progressively worsening issue. Water infiltrates the concrete fissures/ cracks and expands during freezing temperatures; which leads to further cracking and spalling; which allows even more water to infiltrate; and the deterioration cycle continues to worsen.

Recommended Next Step:

- Eliminate the water infiltration; cutout and repair the concrete fissures; and possibly reface the wall for aesthetics and additional weather protection.

Issue No.5:

- The gas piping on the roof feeding the rooftop units are severely rusted.

Consequence:

- Rust can seriously affect the longevity of steel piping including failure of the connections or the pipe itself. While small gas leaks located outdoors are generally not dangerous they are metered and would increase the building's gas bills. Additionally, small leaks can become large leeks which can become a health and/or safety hazard.

Recommended Next Step:

- All gas piping on roof should be leak tested then scraped and painted, and/or replaced as required.

- **Medium Priority**

Issue No.1:

- The kitchen freezer and cooler compressors are wall mounted in the loading dock area. However, with the loading dock door closed the space gets extremely hot.

Consequence:

- High temperatures will affect the efficiency and longevity of the freezer and cooler condensing unit system.

Recommended Next Step:

- Relocation of the compressor units and/or ventilation of space are recommended.

Issue No.2:

- Automated lighting control was not present. An automated lighting control system should be integrated into future upgrades.

Consequence:

- Currently, without automated lighting controls the building operates inefficiently and does not meet the current energy code.

Recommended Next Step:

- Replacement/ upgrade of the entire building lighting control system(s).

Issue No.3:

- Repair of inoperative power receptacles.

Consequence:

- Outlets without power are useless.

Recommended Next Step:

- Inoperative power receptacles should be repaired.

Issue No.4:

- The fire alarm goes off every time the emergency generator is tested; the emergency generator appears to be scheduled for an automatic startup test more frequently than is required by code.

Consequence:

- False alarms are a hardship for the building occupants and emergency response authorities. Repeated false alarms can cause complacency of the building occupants and emergency response authorities; which can delay future response time of building occupants and emergency response in case of a true emergency. Repeated generator testing can cause undue wear on the emergency components and fuel consumption.

Recommended Next Step:

- Correction of false fire alarms when the generator is exercised; and rescheduling of the automatic startup test.

Issue No.5:

- Magnetic (fire alarm) hold-open door hardware is inoperative at Stair D3.

Consequence:

- When the magnetic hold-open devices are inoperative, building occupants might use other methods of holding the door open. Manual methods of holding a door open will not allow the door to close automatically during an emergency. Building occupants could be at a disadvantage during an emergency.

Recommended Next Step:

- Repair the magnetic hold-open devices for Stair D3.

Issue No.6:

- Egress lighting appears to be insufficient in the LGI room.

Consequence:

- LGI occupants could be at a disadvantage during an emergency.

Recommended Next Step:

- Increase the amount of egress lighting in the LGI room.

Issue No.7:

- Abandoned disconnect switches on roof have been left open and may be energized.

Consequence:

- Open disconnect switches can: allow water to infiltrate the building; serve as hornet/wasp hotel; or could contribute to fire and/or electrocution.

Recommended Next Step:

- All abandoned disconnect switches should be depowered, closed, and/or demolished.

- **Low Priority**
  - All remaining issues in this evaluation can be considered to be low priority.

GILL HALL ELEMENTARY SCHOOL

829 Gill Hall Road
Jefferson Hills, PA 15025
Principal: Tina Mayer
Enrollment: +/- 278

Issues of Immediate Concern at the Gill Hall Elementary School:

- **High Priority**

Issue No.1:

- There are T12 fluorescent lighting fixtures and ballasts throughout the building.

Consequence:

- The T12 fluorescent lighting fixtures and ballasts will become cost prohibitive to maintain.

Recommended Next Step:

- Phasing out the T12 fluorescent lighting fixtures should be considered.

~~**Issue No.2:**~~

- ~~The ballasted and fully adhered EPDM roofing system(s) are beyond their effective useful life and are actively failing/ leaking.~~

~~**Consequence:**~~

- ~~Water infiltration into the buildings can cause superficial damage to interior finishes; prolonged leaking can cause damage to the building structure and create poor indoor air quality concerns.~~

~~**Recommended Next Step:**~~

- ~~The roofing systems should be replaced.~~ [Roof Replacement Summer 2013]

- **Medium Priority**

  Issue No.1:

  - Automated lighting control was not present. An automated lighting control system should be integrated into future upgrades.

  Consequence:

  - Currently, without automated lighting controls the building operates inefficiently and does not meet the current energy code.

  Recommended Next Step:

  - Replacement/ upgrade of the entire building lighting control system(s).

  Issue No.2:

  - During the site observation of 5-12-12, a staff member reported that several circuit boards have been "burning out" due to unknown causes. This issue may be a power quality problem and this issue should be investigated.

  Consequence:

  - While the hazard level from this potential problem is presently unknown, school district costs to replace the referenced circuit boards are quantifiable.

  Recommended Next Step:

  - Investigate the cause of the burned out boards and rectify the problem.

  Issue No.3:

  - The gymnasium equipment control system for raising backboards and controlling other gym equipment features is inoperative. During the site observation of 5-12-12, a staff member reported "smelling burnt electrical" insulation shortly after the 2002 remodel. The subsystem in question is thought to be the gymnasium equipment controller and relay panel(s).

  Consequence:

  - The gymnasium equipment is not functioning as designed due to the failed system; District personnel have bypassed some of the equipment controller circuits in order to manually override the malfunctioning equipment controller.

  Recommended Next Step:

  - Investigate the cause of the malfunction and rectify the problem.

- **Low Priority**

  - All remaining issues in this evaluation can be considered to be low priority.

McCLELLAN ELEMENTARY SCHOOL

360 School Lane
Pleasant Hills, PA 15236-4193
Principal: Mr. Justin Libertore
Enrollment: +/- 388

<u>Issues of Immediate Concern at the McClellan Elementary School:</u>

- **High Priority**

Issue No.1:

- The mechanical units located in the attic spaces have limited access and inadequate clearances and/or work platforms.

Consequence:

- Working on or doing maintenance on mechanical units without proper clearances or work platform areas pose a life safety hazard.

Recommended Next Step:

- Install better access and work platforms for all of the mechanical units in the attic spaces.

Issue No.2:

- There is no access to the roof without the use of ground ladders.

Consequence:

- The lack of roof access complicates any roof and/or roof equipment maintenance.

Recommended Next Step:

- Install code compliant access to the roof.

Issue No.3:

- There are T12 fluorescent lighting fixtures and ballasts are throughout the building.

Consequence:

- The T12 fluorescent lighting fixtures and ballasts will become cost prohibitive to maintain.

Recommended Next Step:

- Phasing out the T12 fluorescent lighting fixtures should be considered.

Issue No.4:

- Structural settlement cracks have manifested on the gymnasium addition.

Consequence:

- Continued settlement can jeopardize the building structure and/or compromise the building exterior envelope.

Recommended Next Step:

- Recommendation for the continued monitoring of the cracks; culminating in remediation of the issue

Medium Priority

Issue No.1:

- Automated lighting control was not present. An automated lighting control system should be integrated into future upgrades.

Consequence:

- Currently, without automated lighting controls the building operates inefficiently and does not meet the current energy code.

Recommended Next Step:

- Replacement/ upgrade of the entire building lighting control system(s).
-

Issue No.2:

- A clearance issue at the emergency generator was observed. The access doors on the building side do not allow a full 90 degree opening.

Consequence:

- Lack of the required clearance could create a hazard for future maintenance.

Recommended Next Step:

- Move the generator and enclosure to allow for the proper clearances.

- **Low Priority**
  - All remaining issues in this evaluation can be considered to be low priority.

JEFFERSON ELEMENTARY SCHOOL

875 Old Clairton Road
Jefferson Hills, PA 15025-3131
Principal: Mr. Christopher Very
Enrollment: +/- 555

Issues of Immediate Concern at the Jefferson Elementary School:

High Priority:

Issue No.1:
- The fully adhered EPDM roofing system is beyond its effective useful life and is actively failing/ leaking.

Consequence:
- Water infiltration into the buildings can cause superficial damage to interior finishes; prolonged leaking can cause damage to the building structure and create poor indoor air quality concerns.

Recommended Next Step:
- The roofing systems should be replaced.

Issue No.2:
- There are T12 fluorescent lighting fixtures and ballasts are throughout the building.

Consequence:
- The T12 fluorescent lighting fixtures and ballasts will become cost prohibitive to maintain.

Recommended Next Step:

- Phasing out the T12 fluorescent lighting fixtures should be considered.

Issue No.3:

- The condensing unit CU-3 is rated for 100 tons but only has one of two (2) required compressors.

Consequence:

- A condensing unit working at half capacity is inefficient and will lead to mechanical failure.

Recommended Next Step:

- The required second compressor needs to be supplied and installed; or due to the age of the existing condensing unit it might be a better idea to replace the entire condensing unit.

Issue No.4:

- Building HVAC controls are the original pneumatic controls. The pneumatic controls are beyond their service life expectancy, and should be replaced.

Consequence:

- The pneumatic controls are inefficient and at this age, prone to service breakdowns.

Recommended Next Step:

- Provisions should be made to replace the pneumatic controls in their entirety with full Direct Digital Controls (DDC) controls; and upgrade to a WEB based HVAC system so that maintenance staff at each school can access units schedule and set points via a laptop computer.

Issue No.5:

- The boiler room cannot be used for storage of combustible materials. (IFC Section 315.2.3).

Consequence:

- Storage in boiler room poses a safety hazard and is against code.

Recommended Next Step:

- Remove storage from the boiler room.

Medium Priority:

Issue No.1:

- The building envelope is showing signs of deterioration.

Consequence:

- Air and/or moisture infiltration of the building can compromise the building thermal envelope and can contribute to an unhealthy working environment.

Recommended Next Step:

- Investigate the causes of the building envelope failures and make the necessary corrections.

Issue No.2:

- Automated lighting control was not present. An automated lighting control system should be integrated into future upgrades.

Consequence:

- Currently, without automated lighting controls the building operates inefficiently and does not meet the current energy code.

Recommended Next Step:

- Replacement/ upgrade of the entire building lighting system.

Issue No.3:

- The paging system is reported to have problems sourcing music and other pages out to classrooms.

Consequence:

- The inconsistent/ inability to ready page between the office and respective classrooms is a hazard for student and/or school safety.

Recommended Next Step:

- The school paging system needs to be replaced/ upgraded for the entire building.

Issue No.4:

- Only half of the school is currently air-conditioned.

Consequence:

- Conditioning only half of the school contributes to a lack of parity for the teaching environments from one side of the building to the other. The humid untreated ventilated air can cause condensation issues while migrating to the cooler air-conditioned side of the building.

Recommended Next Step:

- The building could easily be retrofitted to include cooling throughout.

Issue No.5:

- The 4 ton Rooftop Unit (RTU) serving the administrative offices will need to be replaced in the next 2 to 5 years.

Consequence:

- The age and condition of the unit could result in the failure of the equipment; causing discomfort and the inability to maintain the required ventilation.

Recommended Next Step:

- Replace the 4 ton Rooftop Unit RTU within the next 2-5 years.

- **Low Priority**
  - All remaining issues in this evaluation can be considered to be low priority.

DISTRICT ADMINISTRATION BUILDING

835 Old Clairton Road
Jefferson Hills, PA 15025

Issues of Immediate Concern at the District Administration Building:

- **High Priority**

Issue No.1:
- The building envelope is showing signs of deterioration and is contributing to the collection of water in the building interior from moisture infiltration.

Consequence:
- Moisture collection and infiltration of the building interior accelerates the deterioration of the building structure and can contribute to poor indoor air quality.

Recommended Next Step:
- Investigate the causes of the building envelope failures and make the necessary corrections. This would minimally include replacing the roof and resolving the moisture issues in the basement.

Issue No.2:
- Most major electrical systems are beyond industry recommended service life; while no obvious hazards were observed, system maintenance is expected to become cost prohibitive.

Consequence:

- Replacement parts will continue to become more costly to obtain and systems failure can be expected to increase in number.

Recommended Next Step:

- Replacement/ upgrade of the entire building electrical system(s).

Issue No.3:

- A Comcast service entrance cabinet is positioned directly in front of the electrical service entrance.

Consequence:

- This issue may present a hazard to anyone attempting to maintain the electrical service. The position is a code violation.

Recommended Next Step:

- The Comcast service entrance should be relocated so that it does not pose a clearance hazard.

Issue No.4:

- There are T12 fluorescent lighting fixtures and ballasts are throughout the building.

Consequence:

- The T12 fluorescent lighting fixtures and ballasts will become cost prohibitive to maintain.

Recommended Next Step:

- Phasing out the T12's should be considered.

Issue No.5:

- The roof access ladder presents a safety hazard.

Consequence:

- The ladder does not have fall protection or a ladder extension handgrip. In addition, the ladder is on the hinge-side of the roof hatch making exit and entry difficult.

Recommended Next Step:

- The roof access ladder should be replaced.

- **Medium Priority**

Issue No.1:

- Automated lighting control was not present. An automated lighting control system should be integrated into future upgrades.

Consequence:

- Currently, without automated lighting controls the building operates inefficiently and does not meet the current energy code.

Recommended Next Step:

- Replacement/ upgrade of the entire building lighting control system(s).

Issue No.2:

- The abandoned antenna and associated coax cabling posses a hazard on the roof. Some of the cable stays do not appear to be in good condition.

Consequence:

- Wind or lightning strikes could cause the tower pieces to fall; and/or cause damage to the aged roofing system.

Recommended Next Step:

- Provisions should be made to remove the abandoned antenna and associated coax cabling.

Issue No.3:

- There is not adequate handicap parking, building access, accessible paths of travel throughout the building, or toilet facilities for persons with disabilities.

Consequence:

- Physically challenged persons have difficulty attending meetings and/or events at the District Administration Offices.

Recommended Next Step:

- Create additional barrier free access and add accessible toilet facilities.

- **Low Priority**
  - All remaining issues in this evaluation can be considered to be low priority.

APPENDIX

- **System Components Data**

  - An on-site visit was conducted at each the mentioned buildings and an assessment to their condition and operational functions were reviewed and analysis for this report along with the follow table from ASHRAE for the estimates of service life of various system components.

Table 3 Estimates of Service Lives of Various System Components[a]

Equipment Item	Median Years	Equipment Item	Median Years	Equipment Item	Median Years
Air conditioners		Air terminals		Air-cooled condensers	20
Window unit	10	Diffusers, grilles, and registers	27	Evaporative condensers	20
Residential single or split package	15	Induction and fan-coil units	20	Insulation	
Commercial through-the-wall	15	VAV and double-duct boxes	20	Molded	20
Water-cooled package	15	Air washers	17	Blanket	24
Heat pumps		Ductwork	30	Pumps	
Residential air-to-air	15[b]	Dampers	20	Base-mounted	20
Commercial air-to-air	15	Fans		Pipe-mounted	10
Commercial water-to-air	19	Centrifugal	25	Sump and well	10
Roof-top air conditioners		Axial	20	Condensate	15
Single-zone	15	Propeller	15	Reciprocating engines	20
Multizone	15	Ventilating roof-mounted	20	Steam turbines	30
Boilers, hot water (steam)		Coils		Electric motors	18
Steel water-tube	24 (30)	DX, water, or steam	20	Motor starters	17
Steel fire-tube	25 (25)	Electric	15	Electric transformers	30
Cast iron	35 (30)	Heat exchangers		Controls	
Electric	15	Shell-and-tube	24	Pneumatic	20
Burners	21	Reciprocating compressors	20	Electric	16
Furnaces		Package chillers		Electronic	15
Gas- or oil-fired	18	Reciprocating	20	Valve actuators	
Unit heaters		Centrifugal	23	Hydraulic	15
Gas or electric	13	Absorption	23	Pneumatic	20
Hot water or steam	20	Cooling towers		Self-contained	10
Radiant heaters		Galvanized metal	20		
Electric	10	Wood	20		
Hot water or steam	25	Ceramic	34		

Notes: 1. ASHRAE makes no claims as to the *statistical* validity of any of the data presented in this table.
2. Table lists base values that should be adjusted for local conditions (see the section on Service Life).

Source: Data obtained from a survey of the United States by ASHRAE Technical Committee TC 1.8 (Akalin 1978).
[a] See Lovvorn and Hiller (1985) and Easton Consultants (1986) for further information.
[b] Data updated by TC 1.8 in 1986.

Asset Protection **Projects**

Asset **Protection**

Asset Protection projects are defined as projects that are required to maintain the physical plant of the School District in a clean, safe, functional order, and protect the District from incurring unnecessary collateral damage to the physical plant caused by degradation of building systems and finishes. Also falling into the category of Asset Protection Projects, are projects that upgrade systems or functionality of the buildings, either to sustain, improve/enhance, or modernize the curriculum or Educational Plan.

JC Pierce llc and Loftus Engineers conducted a detailed analysis of the existing physical plant of the School District. The following Asset Protection Projects were recommended for consideration by the District as part of the 10-Year Facilities Master Plan.

- **Upgrade Technology Infrastructure at Thomas Jefferson High School:**
    - **Thomas Jefferson High School/District Admin Building**
      Install new structured cabling, switches, and head-end equipment throughout. Install new data drops as required. Install new VBrick video streaming system at High School.
      Completion Date: **October 2012**
      Final Project Cost: **$305,000**
    - **Pleasant Hills Middle School/Jefferson Elementary School**
      Install new structured cabling (selective), switches, and head-end equipment at Pleasant Hills Middle School. Install new ventilation/cooling at Tech closets as required. Install new structured cabling, switches, head-end equipment, and ventilation/cooling for computer rooms and tech closets at Jefferson Elementary School. Install new data drops and wireless network infrastructure as required at both buildings. Install new VBrick video streaming system at both buildings.
      Projected Completion Date: **October 2013**
      Estimated Project Cost: **$879,262**
    - **Gill Hall Elementary and McClellan Elementary Schools**
      Install new structured cabling, switches, and head-end equipment at both buildings. Install new ventilation/cooling for computer rooms and tech closets at both buildings. Install new data drops and wireless network infrastructure as required at both buildings. Install new VBrick video streaming system at both buildings.
      Projected Completion Date: **October 2014**
      Estimated Project Cost: **$401,800**

ASSET PROTECTION

- **Roof Replacement at Gill Hall Elementary School:**
  Remove existing roof and insulation that was not replaced during the recent renovation project, down to metal deck, and install new code compliant polyisocyanurate rigid insulation and 3-Ply Modified Bitumen roof membrane, with flood coat and granular UV protection.
  Projected Completion Date: **September 2013**
  Estimated Project Cost: **$518,288**

- **Replace Main Gym Bleachers at Thomas Jefferson High School:**
  Remove existing original wood Bleachers and replace with new code compliant Bleachers. Bleachers should be designed to be reusable in another location after construction of the new TJHS (if applicable).
  Projected Completion Date: **September 2013**
  Estimated Project Cost: **$155,000**

- **Replace TJHS Stadium Turf and Running Track:**
  Remove existing artificial turf and install new Artificial Turf. Remove or patch existing TJHS synthetic running track (scope to be finalized), and install either new Synthetic Running Track, or new Rubberized Coating (scope to be finalized). Phase construction of Turf (2013) and Track (2014) to accommodate the District's use of the Stadium.
  Projected Completion Date: **August 2013 / May 2014**
  Estimated Project Cost: **$687,250**

- **Roof Replacement at Jefferson Elementary School:**
  Remove existing roof and insulation down to metal deck, and install new code compliant polyisocyanurate rigid insulation (tapered is required) and 3-Ply Modified Bitumen roof membrane, with flood coat and granular UV protection.
  Projected Completion Date: **September 2020**
  Estimated Project Cost: **$781,824**

- **Roof Replacement at Pleasant Hills Middle School:**
  Remove existing roof and insulation down to metal deck, and install new code compliant polyisocyanurate rigid insulation (tapered is required) and 3-Ply Modified Bitumen roof membrane, with flood coat and granular UV protection.
  Projected Completion Date: **September 2023 or Later**
  Estimated Project Cost: **$1,060,571**

- **Repair Retaining Wall at Pleasant Hills Middle School:**
  Repair deteriorated concrete retaining wall at main entrance to Pleasant Hills Middle School. Repair/replace deteriorated sidewalk. Exact scope of repair work has not been determined, and will be through the course of design and review with the District.
  Projected Completion Date: **September 2014**
  Estimated Project Cost: **$40,000-$75,000**

- **Install Air Conditioning at All District School Buildings:**
  - **Thomas Jefferson High School**
    This work will be included in the project to address the High School Facilities.
    Completion Date: **TBD**
    Final Project Cost: **N/A**
  - **Pleasant Hills Middle School**
    Install new Air Handling Units with Cooling Coils and/or New Chiller System, and all associated piping, ductwork, diffusers, accessories, and controls to provide full-building Air Conditioning System.
    Projected Completion Date: **September 2023 or Later**
    Estimated Project Cost: **$1,000,000**
  - **Jefferson Elementary School**
    Install new Air Handling Units with Cooling Coils and/or New Chiller System, and all associated piping, ductwork, diffusers, accessories, and controls to supplement the infrastructure that is already in place, to provide full-building Air Conditioning System.
    Projected Completion Date: **September 2022**
    Estimated Project Cost: **$700,000**
  - **Gill Hall Elementary and McClellan Elementary Schools**
    Install new Chilled Water System to supplement existing Univent HVAC Equipment, and all associated piping, accessories, and controls to provide full-building Air Conditioning System.
    Projected Completion Date: **September 2023 or Later**
    Estimated Project Cost: **$1,750,000**

- **Lighting and Energy Management Upgrades at All Buildings:**
  - **Thomas Jefferson High School**
    This work will be included in the project to address the High School Facilities.
    Completion Date: **TBD**
    Final Project Cost: **N/A**
  - **Pleasant Hills Middle School**
    This Building has been outfitted with modern Light Fixtures and Ballasts. Energy Management Controls could be considered when the building is next renovated.
    Projected Completion Date: **N/A**
    Estimated Project Cost: **N/A**
  - **Jefferson Elementary School**
    Replace light fixtures and/or ballasts to improve energy efficiency. Install new Automated Lighting Controls throughout building.
    Projected Completion Date: **September 2020**
    Estimated Project Cost: **$750,000**
  - **Gill Hall Elementary and McClellan Elementary Schools**
    Replace light fixtures and/or ballasts to improve energy efficiency in both buildings. Install new Automated Lighting Controls throughout buildings.
    Projected Completion Date: **September 2023 or Later**
    Estimated Project Cost: **$875,000**

ASSET PROTECTION

- **Parking/Circulation Upgrades at Gill Hall Elementary School:** Construct additional paved parking area at Gill Hall Elementary School, and redesign vehicular site circulation and student drop-off to improve efficiency.
  Projected Completion Date: **September 2023 or Later**
  Estimated Project Cost: **$378,000**

- **Maintain the Existing Thomas Jefferson High School (4-5 Years):**
  - **Paving Repair**
    Repair concrete curbs and patch asphalt paving as required on an annual basis.
    Completion Date: **Ongoing**
    Final Project Cost: **$40,000 (Allowance)**
  - **Roof Patching/Repair/Maintenance**
    Patch on-going leaks, repair caulking, repair coping and flashings as required on an annual basis.
    Projected Completion Date: **Ongoing**
    Estimated Project Cost: **$30,000 (Allowance)**
  - **Interior Finish/Ceiling Repair (Roof Leaks)**
    Replace stained ceiling tiles, repair damaged drywall/plaster, and remediate other moisture damage as required.
    Projected Completion Date: **Ongoing**
    Estimated Project Cost: **$20-40,000 (Allowance)**
  - **Caulking and Window/Door/Wall Repair**
    Install new caulking as required at windows and doors. Replace rusted/failed exterior doors as required. Point, caulk, or otherwise repair areas of exterior insulation finish system (EIFS "Dryvit") and masonry as required.
    Projected Completion Date: **Ongoing**
    Estimated Project Cost: **$25,000 (Allowance)**
  - **HVAC Equipment Repair/Replacement**
    Repair inoperable exhaust fans, condensing units, and air handling units as required, and budget for replacement of one major HVAC unit.
    Projected Completion Date: **Ongoing**
    Estimated Project Cost: **$105,000 (Allowance)**
  - **Plumbing Repairs/Maintenance**
    Repair/replace flush valves and faucets as required. Budget for replacement of domestic hot water boiler.
    Projected Completion Date: **Ongoing**
    Estimated Project Cost: **$35,000 (Allowance)**
  - **Electrical Power/Lighting Repair/Maintenance**
    Repair/replace light fixtures as required.
    Projected Completion Date: **Ongoing**
    Estimated Project Cost: **$10,000 (Allowance)**
  - **Technology Updates**
    Supplement recent technology upgrades as required.
    Projected Completion Date: **Ongoing**
    Estimated Project Cost: **$10,000 (Allowance)**

ASSET PROTECTION

- **Maintain the Existing Thomas Jefferson HS (Beyond 5 Years):**
  - **Replace Roofing and Insulation**
    Remove existing roofing and insulation and install new roofing system, flashing and coping. Replace rusted deck as required. Budget varies based on desired lifespan of new roof system (Single-ply EPDM vs Multi-ply Modified Bitumen).
    Completion Date: **2017-2020**
    Final Project Cost: **$1,300,000-$2,000,000**
  - **Replace Mechanical Equipment**
    Replace air-handling units, exhaust fans, and condensing units. Budget for replacement of two boilers and associated pumps. Increase combustion air to Boiler Room.
    Projected Completion Date: **2017-2023**
    Estimated Project Cost: **$900,000-$1,500,000**
  - **Light Fixture/Ballast Upgrades**
    Replace light fixtures and/or ballasts to eliminate T12 lamping. Install lighting controls.
    Projected Completion Date: **2017-2018**
    Estimated Project Cost: **$1,100,000**
  - **Repair/Replace Plumbing Fixtures**
    If domestic hot water boiler is not replaced sooner, replace domestic HW boiler. Continue to replace and repair flush valves and faucets.
    Projected Completion Date: **2017-2023**
    Estimated Project Cost: $**35,000 (Allowance)**
  - **Upgrade Electrical Service**
    Upgrade primary building electrical service to accommodate new technology and HVAC requirements.
    Projected Completion Date: **2017-2023**
    Estimated Project Cost: **$150,000**
  - **Selective Repointing of Exterior Brick Walls/EIFS Repair**
    Repair or replace areas of EIFS, and repoint areas of masonry as required to eliminate water penetration.
    Projected Completion Date: **2017-2023**
    Estimated Project Cost: **$285,000**
  - **Technology Upgrades**
    Supplement technology systems as required to stay current. (Note: 2012 Technology Project was bare minimum in scope due to uncertainty of lifespan of building).
    Projected Completion Date: **2017**
    Estimated Project Cost: **$100,000**
  - **Paving Repair**
    Repave student parking lot. Repair existing paving and curbs as required.
    Projected Completion Date: **2017-2023**
    Estimated Project Cost: **$225,000**

- **Maintain the Existing Administration Building (4-5 Years):**
  - **Paving Repair**
    Repair concrete curbs and patch asphalt paving as required on an annual basis.
    Completion Date: **Ongoing**
    Final Project Cost: **$10,000 (Allowance)**
  - **Roof Patching/Repair/Maintenance**
    Patch leaks as they occur, repair caulking, repair coping and flashings as required on an annual basis.
    Projected Completion Date: **Ongoing**
    Estimated Project Cost: **$6,000 (Allowance)**
  - **Interior Finish/Ceiling Repair (Roof Leaks)**
    Replace stained ceiling tiles, repair damaged drywall/plaster, and remediate other moisture damage as occurs.
    Projected Completion Date: **Ongoing**
    Estimated Project Cost: **$5,000 (Allowance)**
  - **Caulking and Window/Door/Wall Repair**
    Install new caulking as required at windows and doors. Replace rusted/failed exterior doors as required.
    Projected Completion Date: **Ongoing**
    Estimated Project Cost: **$5,000 (Allowance)**
  - **HVAC Equipment Repair/Replacement**
    Maintain exhaust fans, condensing units, and air handling units.
    Projected Completion Date: **Ongoing**
    Estimated Project Cost: **$6,000 (Allowance)**
  - **Plumbing Repairs/Maintenance**
    Maintain flush valves and faucets. Leak-test rooftop gas piping.
    Projected Completion Date: **Ongoing**
    Estimated Project Cost: **$2,500 (Allowance)**
  - **Electrical Power/Lighting Repair/Maintenance**
    Maintain light fixtures and electrical infrastructure.
    Projected Completion Date: **Ongoing**
    Estimated Project Cost: **$1,000 (Allowance)**
  - **Technology Updates**
    Supplement recent technology upgrades as required.
    Projected Completion Date: **Ongoing**
    Estimated Project Cost: **$1,500 (Allowance)**

- **Maintain the Existing Administration Building (Beyond 5 Years):**
  - **Replace Roofing and Insulation**
    Remove existing roofing and insulation and install new roofing system, flashing and coping. Replace rusted deck as required. Install new 3-ply Modified Bitumen Roof system and new tapered insulation as required. Install new roof drain pans and covers. Install new coping and flashing.
    Completion Date: **2017-2020**
    Final Project Cost: **$225,000**

- **Replace Mechanical Equipment**
  Replace air-handling units, exhaust fans, and condensing units.
  Projected Completion Date: **2017-2023**
  Estimated Project Cost: **$145,000**
- **Light Fixture/Ballast Upgrades**
  Replace light fixtures and/or ballasts to eliminate T12 lamping. Install lighting controls.
  Projected Completion Date: **2017-2018**
  Estimated Project Cost: **$37,500 (Allowance)**
- **Repair/Replace Plumbing Fixtures**
  Replace and repair flush valves and faucets.
  Projected Completion Date: **2017-2023**
  Estimated Project Cost: $**10,000 (Allowance)**
- **Selective Repointing of Exterior Brick Walls**
  Repoint areas of masonry as required to eliminate water penetration.
  Projected Completion Date: **2017-2023**
  Estimated Project Cost: **$25,000**
- **Technology Upgrades**
  Supplement technology systems as required to stay current.
  Projected Completion Date: **2017**
  Estimated Project Cost: **$5,000**
- **Paving Repair**
  Repave existing parking lot and replace deteriorated sidewalks and curbs.
  Projected Completion Date: **2017-2023**
  Estimated Project Cost: **$100,000**

Notes:

1. Project costs include both hard (Construction) and soft (Design and other Non-Construction) costs.
2. All project costs are Budget Estimates based on actual scope and conditions of the systems observed in the field, our database of cost for similar work, and factors for inflation. Budgets are generally conservative, contain contingencies, and should reflect a mid-to-high Bid range for Bid-Day costs. “Allowances” are a budget number for work that may or may not be required depending on the rate of deterioration of the building system(s). Actual costs may be lower than the “Allowance”, and would be charged against the “Allowance” as work is needed.
3. Timeline/Schedule for Asset Protection Projects is dependent on several factors, including: 1) Timeline and cost of a High School Modernization project; 2) District financial status/environment over the next 10 years; 3) Condition of Asset Protection Issues, which should be evaluated on an Annual Basis. If funding is available, or if conditions deteriorate more quickly than projected, projects could be accelerated. Likewise, some projects (PHMS Roof), may be deferred if conditions remain static, and systems outlive projected life-span.

4. The 10-Year Capital Improvements Budget included at the end of this Section was developed in conjunction with the District Business Office, and has been used by the District's financial consultant to evaluate the District's capacity to fund the Capital Improvements Program over the next 25 years. This Budget is based on Option C of the High School Modernization Options, which is the preferred Option of the District Stakeholders, and is the recommended Option of the Master Planning Consultant.

West Jefferson Hills School District

10 Year Capital Projects Budget and Timeline- Option 2 Revised — Revised 4-26-13

Project	Estimated Total Project Cost	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023 and Beyond
Stadium Turf & Track	$687,250	$687,250										
TJHS Gym Bleachers	$155,000	$155,000										
Technology Upgrades												
Pleasant Hills MS	$499,000	$499,000										
Jefferson ES	$387,500	$387,500										
McClellan ES	$226,832		$226,832									
Gill Hall ES	$174,968		$174,968									
Roof Replacement												
Gill Hall ES	$518,288	$518,288										
Jefferson ES	$781,824							$39,091	$742,733			
Pleasant Hills MS	$1,060,571											$1,060,571
Air Conditioning												
Jefferson ES**	$700,000									$35,000	$665,000	
McClellan ES*	$950,000											$950,000
Gill Hall ES*	$800,000											$800,000
Pleasant Hills MS	$1,000,000											$1,000,000
Lighting/Energy Replacement												
Jefferson ES	$750,000							$37,500	$712,500			
McClellan ES*	$575,000											$575,000
Gill Hall ES*	$300,000											$300,000
Retaining Wall at PHMS	$75,000		$75,000									
Maintain Exist TJHS (4-5 years)	$285,000		$28,500	$57,000	$99,750	$99,750						
Maintain Exist TJHS (Beyond)	*$4,645,000*						*$1,625,750*	*$1,393,500*	*$464,500*	*$464,500*	*$232,250*	*$464,500*
Maintain Exist Admin (4-5 yrs)	$37,000		$9,250	$9,250	$9,250	$9,250						
Maintain Exist Admin (Beyond)	*$547,500*						*$246,375*		*$136,875*		*$54,750*	*$109,500*
Parking/Circulation at GHES	$378,000											$378,000
Subtotal Asset Protection	**$15,533,733**	**$2,247,038**	**$514,550**	**$66,250**	**$109,000**	**$109,000**	**$1,872,125**	**$1,470,091**	**$2,056,608**	**$499,500**	**$952,000**	**$5,637,571**
New Thomas Jefferson HS												
Construction	$65,542,613			$1,310,852	$28,183,324	$32,771,307	$3,277,131					
Architecture and Engineering	$4,186,332	$418,633	$1,465,216	$1,465,216	$376,770	$376,770	$83,727					
Construction Management	$1,610,128		$80,506	$161,013	$644,051	$644,051	$80,506					
Other Soft Costs	$777,456	$77,746	$155,491	$310,982	$77,746	$77,746	$77,746					
Subtotal High School	**$72,116,529**	**$496,379**	**$1,701,214**	**$3,248,064**	**$29,281,890**	**$33,869,873**	**$3,519,109**	**$0**	**$0**	**$0**	**$0**	**$0**
Total:		**$2,743,417**	**$2,215,764**	**$3,314,314**	**$29,390,890**	**$33,978,873**	**$5,391,234**	**$1,470,091**	**$2,056,608**	**$499,500**	**$952,000**	**$5,637,571**

Notes:
1. HS Soft Costs does not include Property Acquisition (since this is already paid)
2. Financing Costs have not been included (assume Financial Consultant will add)
3. *Defer this work to a Future Reimbursable Project (if applicable)
4. **Decouple this work from the Roof Replacement Project
5. Italic Items/Numbers are costs which would not be incurred if a New High School/Admin Facility was constructed by end of 201?

SUMMARY OF STRATEGIC GOALS

Summary and **Strategic Goals**

Through analysis of the parameters that will make this project a success, a set of fundamental issues has been identified which must be resolved to ensure that this master plan meets the needs and long-term strategy of West Jefferson Hills School District.

Those issues are:

- The disparity between the perceived quality of life and education delivered in the school district and the condition of the High School facilities.
- The potential for future District growth and the necessary flexibility required to avoid capacity issues.
- The resolution of current (and ongoing) facilities asset degradation.
- The impact of the scope and schedule of future capital projects on the District fund balance, debt service, and potential funding limitations.

The following **Strategic Goals** have emerged, which if met, will result in a successful Long Range Master Plan that addresses the Strategic Needs of the West Jefferson Hills School District:

1. **Curriculum Drives Facilities:** Facilities decisions are based on the District's Educational Program/Plan, and a desire to create Optimal Learning Environments. "Optimal Learning Environments" are defined as those which promote the highest potential for learning for all students, while addressing each child's unique needs and individual capacity for learning and growth.

2. **Modernize High School Facilities:** Address the physical deficiencies at the High School building to create a building or structure that is capable of facilitating 21st century curriculum and learning.

3. **Address Long Term District Growth:** Assuming that community development and housing growth occurs, assure that there is a specific, practical, and feasible plan for addressing capacity at all District schools.

SUMMARY OF STRATEGIC GOALS

4. **Derived from "Our" Unique Needs:** Assure that any solution implemented can be justified by the WJHSD Strategic Plan, Mission, and Vision.

5. **Implementation /Feasibility:** Facilities Options/Solutions must be technically feasible, and be able to be implemented within the physical, educational, and financial parameters of the School District.

6. **Operational Efficiency:** Facilities must be durable, and provide enduring, long-term solutions to practical problems. Facilities improvements must be long-term solutions, which will mitigate to the greatest extent possible, the District's need to incur similar/related major costs for 20-30 years.

7. **Fiscal Responsibility:** Facilities Options/Solutions must balance first costs and funding issues/strategies against implementation issues, operational issues, and long-term viability/durability.

Analysis of **Options**

Analysis **Approach**

In order to determine the most effective option, we analyzed each Option and rated how well each Option supports the District's Strategic Goals, as determined by factors that will measure the success of the projects. The Strategic Goals are:

- **Curriculum Drives Facilities:**
  - Facilities decisions are based on the District's Educational Program/Plan, and a desire to create Optimal Learning Environments. "Optimal Learning Environments" are defined as those which promote the highest potential for learning for all students, while addressing each child's unique needs and individual capacity for learning and growth.

- **Modernize High School Facilities:**
  - Address the physical deficiencies at the High School building to create a building or structure that is capable of facilitating 21st century curriculum and learning.

- **Address Long-Term District Growth:**
  - Assuming that community development and housing growth occurs, assure that there is a specific, practical, and feasible plan for addressing capacity at all District schools.

- **Derived from Our Unique Needs:**
  - Assure that any solution implemented can be justified by the WJHSD Strategic Plan, Mission, and Vision.

- **Implementation/Feasibility:**
  - Facilities Options/Solutions must be technically feasible, and be able to be implemented within the physical, educational, and financial parameters of the School District.

- **Operational Efficiency:**
  - Facilities must be durable, and provide enduring, long-term solutions to practical problems. Facilities improvements must be long-term solutions, which will mitigate to the greatest extent possible, the District's need to incur similar/related major costs for 20-30 years.

- **Fiscal Responsibility:**
  - Facilities Options/Solutions must balance first costs and funding issues/strategies against implementation issues, operational issues, and long-term viability/durability.

Evaluation Matrix — Growth Options

Item	Curriculum Drives Facilities	Modernize High School Facilities	Address Long Term District Growth	Derived from "Our" Unique Needs	Implementation/ Feasibility	Operational Efficiency	Fiscal Responsibility		Unweighted Score	Cost
Option 1: (Average)	**2.9**	**0**	**2.9**	**2.5**	**1.5**	**2.7**	**1.7**		**14.2**	N/A
Board	2.6	0	2.6	2	0.8	2.4	0.8		11.2	
Administration	3.1	0	3.1	2.9	2.1	3	2.6		16.8	
Master Planners	3	0	3.8	3	2.6	2	1.8		16.2	
Addition at Gill Hall ES; Addition at Jefferson ES; Redistrict Feeder Patterns for All Elementary Buildings.										
Option 2: (Average)	**2.8**	**0**	**3**	**2.3**	**1.8**	**2.2**	**1.7**		**13.8**	N/A
Board	2.4	0	2.8	1.8	1.1	2	1.2		11.3	
Administration	3.1	0	3.1	2.8	2.4	2.4	2.2		16	
Master Planners	2	0	2	1	3.2	1	2.5		11.7	
Large Addition at Jefferson ES; Redistrict Feeder Patterns for All Elementary Buildings.										
Option 3: (Average)	**2.3**	**0**	**2.6**	**1.3**	**1.6**	**2**	**1.1**		**10.9**	N/A
Board	2.2	0	2.6	1.3	1.2	2.4	1.2		10.9	
Administration	2.3	0	2.6	1.3	2	1.7	1.1		11	
Master Planners	2.5	0	3	2.8	1.5	2.8	2		14.6	
Realign Grade Structure; 5th Grade Moves to PHMS; Addition at PHMS; Redistrict All Elementary Buildings.										
Option 4: (Average)	**2.3**	**2.9**	**3.2**	**1.9**	**2**	**3.3**	**2.6**		**18.2**	N/A
Board	2.8	2.6	3.4	1.9	1.9	3.6	2.1		18.3	
Administration	1.7	3.1	3	1.9	2.1	2.9	3.1		17.8	
Master Planners	2.5	3	3	3	4	4	3		22.5	
Realign Grade Structure; 8th Grade Moves to New TJHS; 5th Grade Moves to PHMS; K-4 at All Elementary Buildings.										

Key:
- 0 = Not Feasible
- 1 = Fair
- 2 = Moderate
- 3 = Good
- 4 = Excellent

Interpretive **Analysis**
Growth Options

Based on the ratings for each Growth Option, from best to worst, the preferred options are:

Growth Options:

1. Option **4 – 18.2 Points**
2. Option **1 – 14.2 Points**
3. Option **2 – 13.8 Points**
4. Option **3 – 10.9 Points**

Option 4 – Preferred Option

Realign Grade Structure; 8th Grade to New TJ High School; 5th Grade to PHMS; K-4 at all Elementary Buildings

Option 4 realigns the grade structure at the Elementary Level to become K-4, and maintains the current configuration of three (3) Elementary Schools. This Option would relocate the 8th Grade from the Pleasant Hills Middle School (PHMS) to a New Thomas Jefferson High School (TJHS) building, making room in PHMS for the 5th Grade to relocate to PHMS from the elementary buildings. In this Option, it is anticipated that no Additions or construction would be needed at the elementary or middle school buildings. A new 8th Grade Classroom Addition would be constructed at the site of the new TJHS. Feeder patterns for elementary students would be redistricted to balance the student population at all three elementary schools and maintain similar class sizes at all three schools. This Option is only viable in conjunction with the construction of a new TJHS.

Analysis

This Option scores highly against the strategic goals of Operational Efficiency, Address Long Term Growth, and Modernize High School Facilities. Operationally, this option requires no enlargement of existing buildings, and opens space at all elementary buildings to allow for the most flexibility and ease of balancing of student population across the elementary schools. The 8th Grade can be easily integrated into the new High School, with a pre-planned future addition to that project. This Option enhances the new High School project, because it increases the student count to a more efficient size of 1,000-1,200 students, thereby better optimizing square foot/student ratio. Educationally (Curriculum Drives Facilities), this Option benefits the 8th grade students by providing High School-level infrastructure and curricular opportunities a year earlier. Also, at WJHSD, 8th graders participate in some extra-curricular activities with High School students. This Option allows for easier access and transportation to those activities.

This Option also scores well in terms of Implementation and Feasibility, because it can be pre-planned into the High School project. This Option also scores the highest of all Options in Fiscal Responsibility, because it is less expensive to build a pre-planned addition on the relatively accessible High School site, than it is to build several additions to one or more Elementary/Middle School Buildings, three of which have already been renovated in the last ten years.

Option 1

Addition at Gill Hall ES; Addition at Jefferson ES; Redistrict Feeder Patterns for All Elementary Buildings

Option 1 maintains the current grade structure of K-5 at the Elementary Level, and maintains the current configuration of three (3) Elementary Schools. This Option would require the construction of classroom additions at both Gill Hall and Jefferson Elementary Schools. No addition would be constructed at McClellan Elementary. In this Option, no work would be done at Pleasant Hills Middle School, which would retain it's 6-8 grade structure. Feeder patterns for elementary students would be minimally redistricted to balance the student population at all three elementary schools and maintain similar class sizes at all three schools. This Option has no bearing on the High School Options currently under consideration.

Analysis

This Option scores the highest against the strategic goal of Curriculum Drives Facilities. This probably relates to a reluctance among District Stakeholders to implement grade structure realignment, which must be carefully planned and executed. This Option adequately addresses Long Term Growth, and scores relatively highly in Operational Efficiency (probably owing to a comfort level in operating the current District grade structure and curriculum delivery. This Option would address growth where it is currently occurring at Gill Hall ES, but would require redistricting from McClellan ES to Jefferson ES.

This Option scores very poorly on Implementation and Feasibility, and Fiscal Responsibility. It would be difficult to provide the financial justification for building additions to two elementary buildings in the district: one of which was just renovated and enlarged less than 10 years ago, and one which is already almost double the size of the other two elementary buildings. The construction would create disruption at two buildings, likely at the same time. While the site at Jefferson ES is large, the building design does not easily lend itself to enlargement. This Option would increase the District's debt service, while not providing the Operational enhancements to the High School provided by Option 4.

Option 2

Large Addition at Jefferson ES; Redistrict Feeder Patterns at all Elementary Buildings

Option 2 maintains the current grade structure of K-5 at the Elementary Level, and maintains the current configuration of three (3) Elementary Schools. This Option would require the construction of a large classroom addition at Jefferson Elementary School. No addition would be constructed at Gill Hall or McClellan Elementary Schools. In this Option, no work would be done at Pleasant Hills Middle School, which would retain it's 6-8 grade structure. Feeder patterns for elementary students would be redistricted to balance the student population at all three elementary schools and maintain similar class sizes at all three schools. This Option has no bearing on the High School Options currently under consideration.

Analysis

Like Option 1, above, this Option scores highly against the strategic goal of Curriculum Drives Facilities. Once again, this probably relates to a reluctance among District Stakeholders to implement grade structure realignment. This Option scores highly in Addresses Long Term Growth, but scores much lower in Operational Efficiency than Option 1. The main operational issue with this Option is the eventual size of Jefferson ES, which grows to a school of close to 800 students. That is a very large elementary school for a community like WJHSD, and would present a significantly different educational and cultural experience from Gill Hall and McClellan Elementaries. Another operational issue with this Option is that it does not address growth where it is occurring: the Gill Hall Corridor and Hunters Field. A significant change in the District feeder pattern map would need to occur to redistrict students from Pleasant Hills and the Gill Hall area to Jefferson ES.

This Option scores worst in Implementation and Feasibility, and poorly in Fiscal Responsibility. Once again, it would be difficult to provide the financial justification for building a very large addition to a school that is already almost double the size of the other two elementary buildings. As stated above, while the site at Jefferson ES is large, the building design does not easily lend itself to enlargement. This Option would increase the District's debt service, while not providing the Operational enhancements to the High School provided by Option 4.

ANALYSIS OF OPTIONS

<u>Option 3</u>

Realign Grade Structure; 5th Grade moves to PHMS; Addition at PHMS; Redistrict Feeder Patterns at all Elementary Buildings

Option 3 realigns the grade structure at the Elementary Level to become K-4, and maintains the current configuration of three (3) Elementary Schools. This Option would relocate the 5^{th} Grade from all three elementary schools to Pleasant Hills Middle School (PHMS), thereby changing the grade structure at PHMS to 5-8. To create space in PHMS for the 5^{th} Grade, a large addition would be constructed at PHMS. In this Option, it is anticipated that no Additions or construction would be needed at the elementary school buildings. Feeder patterns for elementary students would be redistricted to balance the student population at all three elementary schools and maintain similar class sizes at all three schools. This Option has no bearing on the High School Options currently under consideration.

<u>Analysis</u>

This Option was the lowest scoring overall, and does not score highly when measured against any of the Strategic Goals. It scores Moderate/Good against only two Goals: Curriculum Drives Facilities and Address Long Term Growth. This Option does adequately solve the growth pressure at the Elementary Schools with the same basic solution as Option 4 – by relocating the 5^{th} Grade from all three elementary buildings. In that respect, it similarly allows for the most flexibility and ease of balancing of student population across the elementary schools. This was the lowest scoring Option in Fiscal Responsibility. This can be interpreted as a belief on the part of the District Stakeholders that it is not a good financial investment to enlarge a building that is the most recent in the District to be renovated.

This Option also scores very low in Implementation/Feasibility. This can be attributed to the site logistics. The site of the Pleasant Hills Middle School is very congested, and is tightly bordered by the homes on Dutch Lane and Old Clairton Road. Building an addition on this site would require careful planning, especially if the new addition were also to solve facilities deficiencies in the building which were not addressed in the most recent addition (ie. provide a new full-size gymnasium). There is one practice field on the site, and it is not an option to give up that field as a site for an addition. Also, any addition constructed on that field would have to span the driving lane, or result in the complete redesign of site circulation. In the end, it was judged that it is less desirable to enlarge a recently renovated building in the District, when enlarging the yet to be designed High School facility would be more cost effective and operationally efficient – especially since this addition does not allow the District to keep the current grade structure, as would be the case with the additions in Options 1 and 2.

Evaluation Matrix — High School Options

Item	Curriculum Drives Facilities	Modernize High School Facilities	Address Long Term District Growth	Derived from "Our" Unique Needs	Implementation/ Feasibility	Operational Efficiency	Fiscal Responsibility		Unweighted Score	Cost
Option A: (Average)	**1.8**	**1.2**	**1**	**1**	**1**	**1**	**2.4**		**9.4**	$63,623,119
Board	1.6	0.8	0.8	0.8	0.8	0.8	2.8		8.4	
Administration	2	1.6	1.3	1.1	0.9	1	2		9.9	
Master Planners	2	2	1	1	0	1	1.4		8.4	
Additions and Alterations to the Existing TJHS; Does Not Include New District Admin; Construction - 48 Months.										
Option B:	**2.9**	**2.8**	**2.3**	**1.7**	**1.7**	**1.3**	**1**		**13.7**	$77,579,874
Board	3.4	2.5	2.4	1.6	1.4	1.2	0.6		13.1	
Administration	2.4	3.1	2.1	1.7	1.9	1.4	1.4		14	
Master Planners	3	4	1	2	1.8	3	0		14.8	
New HS Building on the Existing TJHS Site; New District Admin; Construction - 36 Months.										
Option C:	3.8	4	3.8	3.6	3.8	3.8	3.3		**26.1**	$74,691,529
Board	4	4	4	3.5	3.8	3.8	3.2		26.3	
Administration	3.6	4	3.6	3.8	3.8	3.8	3.4		26	
Master Planners	4	4	4	4	3	4	3		26	
New HS Building on the Newly Acquired Property ; New District Admin; Construction - 24 Months.										

Key: 0 = Not Feasible
1 = Fair
2 = Moderate
3 = Good
4 = Excellent

Interpretive **Analysis**
High School Modernization Options

Based on the ratings for each High School Modernization Option, from best to worst, the preferred options are:

High School Modernization Options:

1. Option **C – 26.1 Points** $74,691,529
2. Option **B – 13.7 Points** $77,579,874
3. Option **A – 9.4 Points** $63,623,119

Option C – Preferred Option

Build a New Thomas Jefferson High School building on the Property Recently Acquired along Old Clairton Road, across from the existing District Administration Building. Demolish the existing High School building, and convert the site of the existing building to parking and practice fields. The High School Stadium, Field House, and Varsity Softball Field would remain where they are.

Option C is the construction of a new, 241,000 GSF Thomas Jefferson High School building on a 151 Acre property along Old Clairton Road. Area for the new building was preliminarily based on the following program:

Academic Program
- State-of-the-art General Classrooms
- Science Laboratory Classrooms
- World Language Classrooms
- Special Education Classrooms
- LGI/SGI Rooms
- Tech-Ed Suite
- Family Consumer Science Suite
- Fine/Visual Arts Suite
- Music, Band and Choral Suite
- 1,000 Seat Auditorium with Full Fly Space
- State-of-the-art Media Center/Library
- TJTV Studio and Support Space

Academic Support Spaces
- Cafeteria and "Food Court"-style Serving Area
- Full-Production Kitchen
- Administration Suite
- Nurse Suite
- Faculty Support Spaces

Athletic Facilities
- Natatorium with Competition Pool and Support Facilities
- Competition and Auxiliary Gymnasiums
- Locker/Training Room Facilities
- Wrestling Room Suite
- Weight Training Suite
- Fitness/Aerobics/Gymnastics Area

ANALYSIS OF OPTIONS

Outdoor Facilities
- Grass Practice Field
- Turf Football/Soccer/Band Practice Field
- Varsity Baseball Field
- Parking and Restroom Facilities

LEED/Sustainability Features
- Geothermal Well Field / Ground-Source Heat Pump HVAC System
- Storm Water Collection System (Cisterns for Reuse of Storm Water in Building)
- Advanced Automated Lighting Controls
- Day-lighting throughout
- Rain Gardens and Bio-swales for Storm Water Management
- High Efficiency Thermal Envelope (Insulation, Windows, etc.)
- Recycled Materials / Local Materials

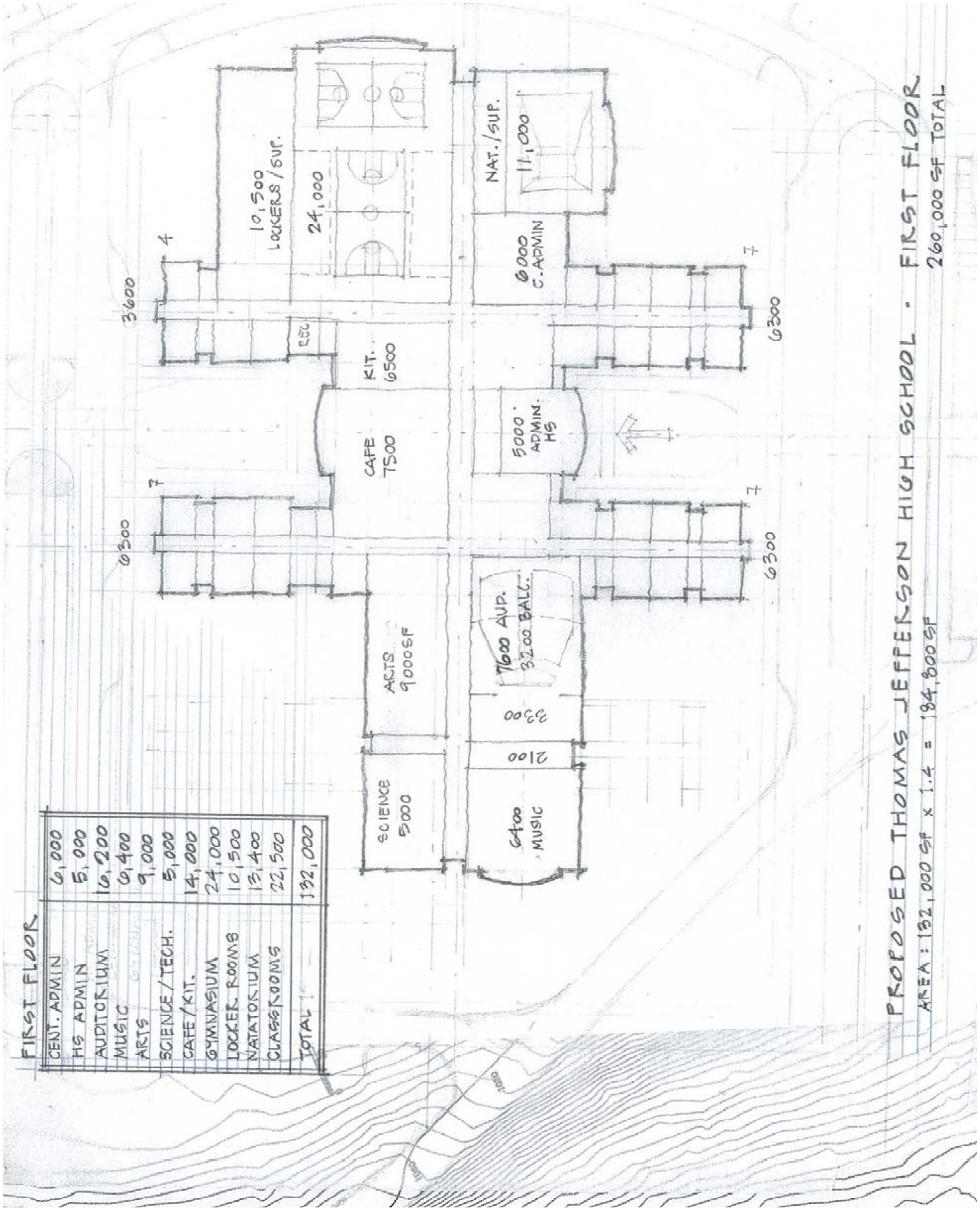
Analysis

Option C scores highly when measured against all Strategic Goals. This Option scores higher than ALL other Options in ALL categories. Building a new school allows the District to custom design the building to meet the Educational Program and curriculum in the best way possible, thereby scoring the highest score possible in Curriculum Drives Facilities. By building the structure on a wide open site (as opposed to Option B), the District is not limited by the existing development of the current High School site. This Option addressed Long Term Growth by accommodating a potential future 8^{th} Grade addition. It is capable of Implementation and Feasibility because the District has determined that it can be funded within the District's debt service limits and revenue stream, and it can be built while the existing building is occupied. There would be no disruption to the existing High School program during construction of the new building. The District would also have the additional possibility of incorporating new District Administration Offices into the new High School building program; which would eliminate the need to renovate the existing District Administration building. Finally, a new building is the most Operationally Efficient solution considered, since it should be less expensive to own, and should not require any major expenditure for 20+ years. If the new building were designed to LEED standards, the payback in Operational Efficiency would be 3-7 years, and the savings in energy costs would be 30-40%.

ANALYSIS OF OPTIONS

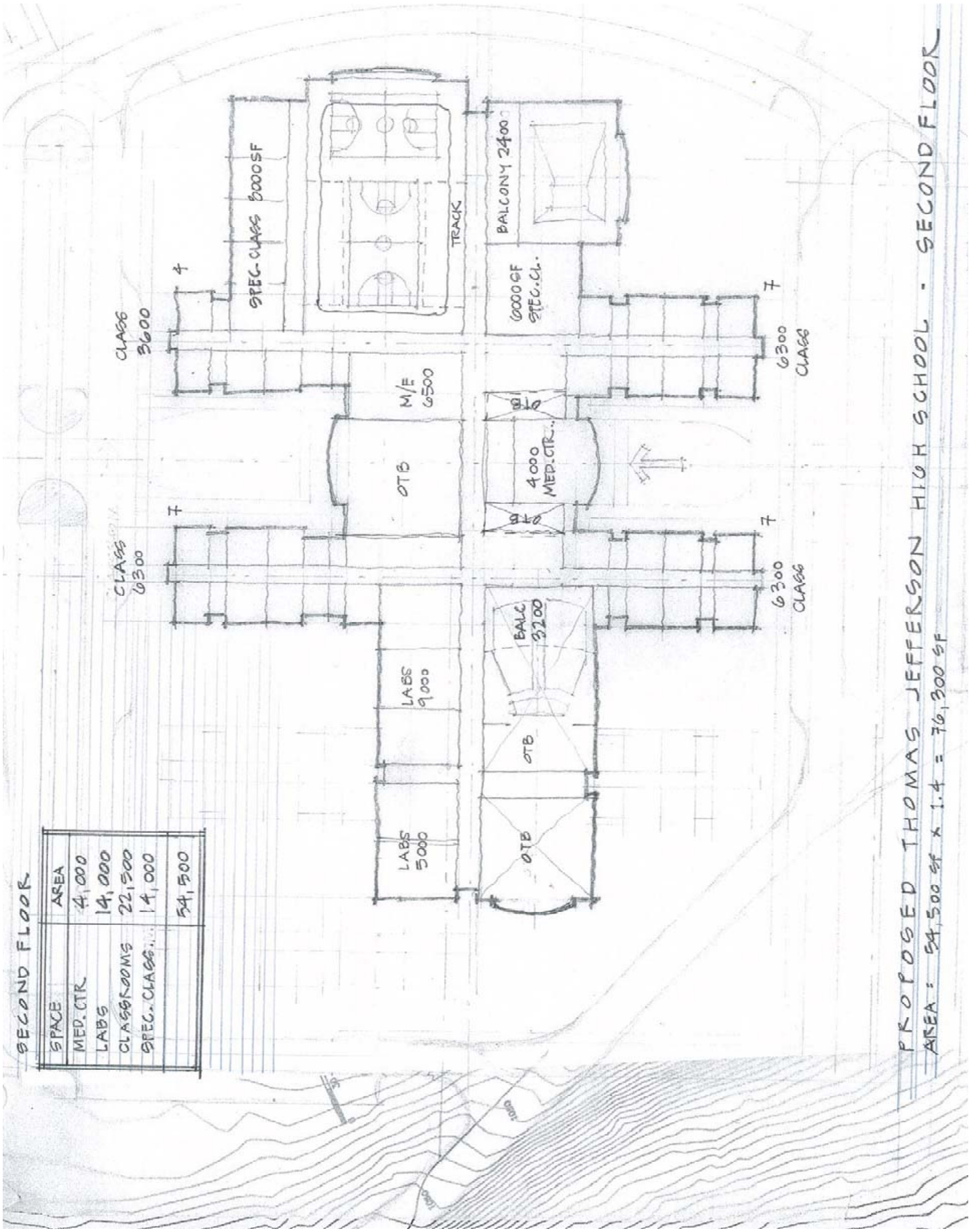
PROPOSED SITE PLAN OPTION C

ANALYSIS OF OPTIONS

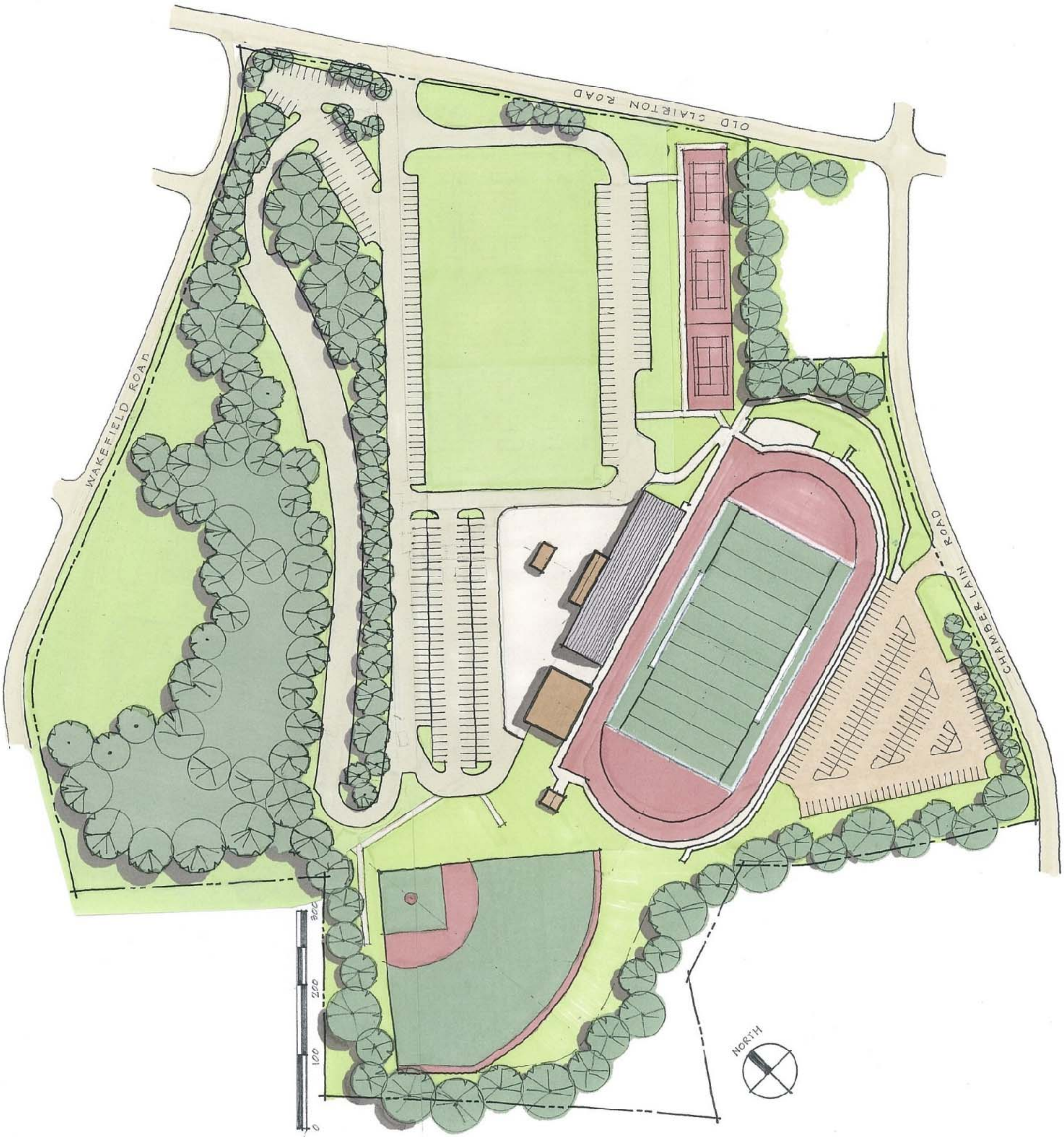


PROPOSED FIRST FLOOR PLAN OPTION C

ANALYSIS OF OPTIONS



PROPOSED SECOND FLOOR PLAN OPTION C



PROPOSED SITE PLAN OPTION C OF EXISTING HIGH SCHOOL PROPERTY POST DEMOLITION

Option C - New TJHS on New Site

February 21, 2013

West Jefferson Hills School District

Preliminary Cost Model

Option C - New TJHS on New Site Item	Area (SF)	Unit Cost/SF	Total Cost	Notes
Building Construction Cost				
New Construction				
Regular Classrooms	45,000	$190	$8,550,000	850 SF minimum
Specialty Classrooms	19,000	$200	$3,800,000	1000 SF minimum
Science Labs	14,000	$250	$3,500,000	1200 SF minimum
Auditorium	16,200	$250	$4,050,000	
Arts and Music Suites	15,400	$200	$3,080,000	
Library/Media Center	4,000	$225	$900,000	
Gymnasium/Athletic Facilities	23,000	$190	$4,370,000	
Natatorium	13,400	$225	$3,015,000	
Locker Rooms	10,000	$275	$2,750,000	
Cafeteria	7,500	$225	$1,687,500	
Full Service Kitchen	6,500	$300	$1,950,000	
Administration (High School)	5,000	$175	$875,000	
Sitework (New Building Site)	1	$6,000,000	$6,000,000	Allowance
Net Program Area	179,000			
Circulation/Structure/Support Spaces	62,650	$175	$10,963,750	0.35
Subtotal New Construction	**241,650**	**$229**	**$55,491,250**	
Demolition and Existing Site Development				
Asbestos Abatement	50,000	$1.50	$75,000	
Building Demoltion	211,723	$5	$1,058,615	
Sitework (Existing Site)	1	$500,000	$500,000	Allowance
Subtotal Demolition and Existing Site Development			**$1,633,615**	
Contingencies and Supplementary Cost				
Project Contingency		8%	$4,439,300	
Escalation		3%	$1,664,738	to Mid-Point Const. (2 Yrs)
Insurance		Allow	$1,300,000	Estimate (OCIP)
Permits		Allow	$400,000	Negotiate w/Jeff Hills
Bonds		2%	$1,109,825	Estimate
Subtotal Contingencies and Supplementary Cost			**$8,913,863**	
Total Building Construction Cost			**$64,405,113**	
Soft Costs				
Survey		Allow	$20,000	Estimate
Civil Engineering		Allow	$200,000	Estimate
Land Development Planning Approval		Allow	$20,000	Estimate
Food Service Equipment Consulting		Allow	$25,000	Estimate
Soils Testing/Drilling/Report/Observation		Allow	$100,000	Estimate
Site Environmental Phase I		Allow	$0	Completed (AECOM)
Environmental Engineering (Asbestos)		Allow	$35,000	Estimate
Property Acquisition		Allow	$1,075,000	District Owned Property
Legal Fees		Allow	$100,000	Estimate
CM Fee		2.5%	$1,610,128	
Building Commissioning		0.5%	$277,456	Required for LEED
A/E Fee		6.5%	$4,186,332	Includes LEED Consulting
Financing Costs		Allow	$1,500,000	Estimated
PlanCon Reimbursement (Credit)		Allow	$0	Moratorium in Place
Subtotal Soft Costs			**$9,148,916**	
Estimated Total Project Cost			**$73,554,029**	Without District Admin
Relocate District Administration				
Add District Administration	6,500	$175	$1,137,500	
Subtotal Include District Administration			**$1,137,500**	
Estimated Total Project Cost			**$74,691,529**	With District Admin

ANALYSIS OF OPTIONS

Option B

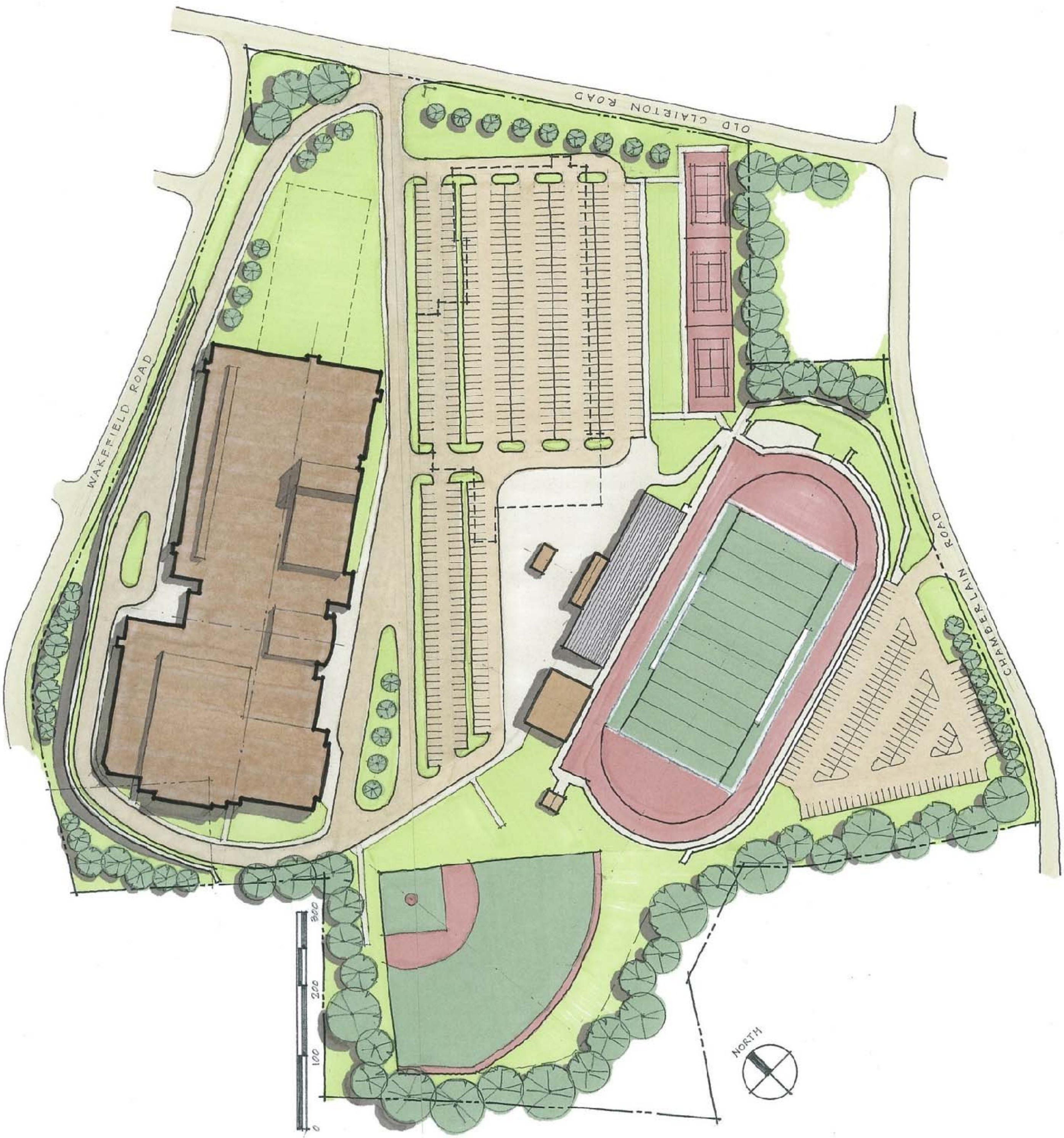
Build a New Thomas Jefferson High School building on District-owned property at the Site of the existing High School, along Chamberlain Road. Demolish the existing High School building, and convert the site of the existing building to parking and practice fields. The High School Stadium, Field House, and Varsity Softball Field would remain where they are.

Option B is the construction of a new, 241,000 GSF Thomas Jefferson High School building with a similar building Space Program to Option C:

Analysis

Option B scores highly when measured against, Curriculum Drives Facilities and Modernize High School Facilities, but these scores are lower than Option C for the same category. This Option scores very low against all other Strategic Goals. Though a new building, it would be neither as efficient, nor as tailored to meet the curriculum, as Option C, due to the fact that the site design would heavily drive the building layout/configuration. This Option would be much more difficult to Implement due to the sever site congestion and logistics of trying operate the existing High School building while the new school was being constructed. Also, construction of this an additional year compared to Option C, due to the site limitations. When completed, the site would still be congested, and would have massive retaining walls and steeply sloped roads and driveways. This Option scores lowest of all against Fiscal Responsibility, since it is the most expensive Option, and the higher cost is not being driven by a bigger/better program, but rather by additional site costs for retaining walls and earthwork, as well as extended construction duration and site logistics staging issues.

In the final analysis of Option B, the lack of merit of this Option is apparent: Why would the District pay a higher construction cost for a building compromised by it's site, the construction of which would cause massive disruption to the ongoing High School program – especially considering that the site and building will be much more difficult to operate for the life of the structure?



PROPOSED SITE PLAN OPTION B

Option B - New TJHS on Existing Site

February 21, 2013

West Jefferson Hills School District

Preliminary Cost Model

Option C - New TJHS on Existing Site Item	Area (SF)	Unit Cost/SF	Total Cost	Notes
Building Construction Cost				
New Construction				
Regular Classrooms	45,000	$200	$9,000,000	850 SF minimum
Specialty Classrooms	19,000	$220	$4,180,000	1000 SF minimum
Science Labs	14,000	$260	$3,640,000	1200 SF minimum
Auditorium	16,200	$260	$4,212,000	
Arts and Music Suites	15,400	$220	$3,388,000	
Library/Media Center	4,000	$236	$944,000	
Gymnasium/Athletic Facilities	23,000	$200	$4,600,000	
Natatorium	13,400	$236	$3,162,400	
Locker Rooms	10,000	$288	$2,880,000	
Cafeteria	7,500	$236	$1,770,000	
Full Service Kitchen	6,500	$350	$2,275,000	
Administration (High School)	5,000	$183	$915,000	
Sitework (New Building Site)	1	$6,000,000	$6,000,000	Allow, Inc. Retaining Walls
Net Program Area	179,000			
Circulation/Structure/Support Spaces	62,650	$175	$10,963,750	0.35
Subtotal New Construction	**241,650**	**$239**	**$57,930,150**	**5% Logistics Premium**
Demolition and Existing Site Development				
Asbestos Abatement	50,000	$1.50	$75,000	
Building Demoltion	211,723	$7	$1,482,061	Site Logistics Premium
Sitework (Existing Site)	1	$500,000	$500,000	Allowance
Subtotal Demolition and Existing Site Development			**$2,057,061**	
Contingencies and Supplementary Cost				
Project Contingency		8%	$4,634,412	
Escalation		4.5%	$2,606,857	to Mid-Point Const. (3 Yrs)
Insurance		Allow	$1,300,000	Estimate (OCIP)
Permits		Allow	$400,000	Negotiate w/Jeff Hills
Bonds		2%	$1,158,603	Estimate
Subtotal Contingencies and Supplementary Cost			**$10,099,872**	
Total Building Construction Cost			**$68,030,022**	
Soft Costs				
Survey		Allow	$20,000	Estimate
Civil Engineering		Allow	$200,000	Estimate
Land Development Planning Approval		Allow	$20,000	Estimate
Food Service Equipment Consulting		Allow	$25,000	Estimate
Soils Testing/Drilling/Report/Observation		Allow	$100,000	Estimate
Site Environmental Phase I		Allow	$0	Completed (AECOM)
Environmental Engineering (Asbestos)		Allow	$35,000	Estimate
Legal Fees		Allow	$100,000	Estimate
CM Fee		2.5%	$1,700,751	
Building Commissioning		0.5%	$289,651	Required for LEED
A/E Fee		6.5%	$4,421,951	Includes LEED Consulting
Financing Costs		Allow	$1,500,000	Estimated
PlanCon Reimbursement (Credit)		Allow	$0	Moratorium in Place
Subtotal Soft Costs			**$8,412,353**	
Estimated Total Project Cost			**$76,442,374**	Without District Admin
Relocate District Administration				
Add District Administration	6,500	$175	$1,137,500	
Subtotal Include District Administration			**$1,137,500**	
Estimated Total Project Cost			**$77,579,874**	With District Admin

ANALYSIS OF OPTIONS

Option A – Additions and Renovations to Existing Building

Demolish and rebuild certain areas of the existing Thomas Jefferson High School. Renovate existing areas to remain.

Option A includes the renovation of approximately 174,623 GSF of program area in the existing TJHS building. This Option includes the demolition of approximately 37,000 GSF of existing area (primarily Auditorium, Gymnasium, and Cafeteria space that cannot be enlarged), and construction of approximately 91,300 GSF of new addition space. Area for the project was preliminarily based on the following program:

New Additions

- General Classrooms and Specialty Classrooms
- Science Laboratory Classrooms
- Music, Band and Choral Suite
- 1,000 Seat Auditorium with Full Fly Space
- State-of-the-art Media Center/Library
- Cafeteria and “Food Court”-style Serving Area
- Full-Production Kitchen
- Administration Suite w/Nurse Suite
- Faculty Support Spaces
- Natatorium with Competition Pool and Support Facilities
- Competition Gymnasium with Locker/Training Room Facilities
- Wrestling Room Suite
- Weight Training Suite

Renovation

- All other Classroom and Indoor Spaces
- Tech Ed Area
- Replace Roof and Insulation
- Replace HVAC Systems Building-wide and Air Condition Building
- Replace Electrical/Lighting Systems and Upgrade Electrical Service
- Replace all Plumbing Systems and add Fire Suppression System
- Augment 2012 Technology Upgrades throughout
- Replace Windows, Exterior Doors and Hardware
- Selective Masonry Re-pointing on all facades
- Replace sidewalks and curbs where needed
- Replace asphalt paving where needed
- Upgrade Landscaping around building/site
- Reconfigure site circulation
- Other work as identified

LEED/Sustainability Features

- Storm Water Collection System (Cisterns for Reuse of Storm Water in Building)
- High Efficiency HVAC System and Controls
- Advanced Automated Lighting Controls
- Recycled Materials / Local Materials

ANALYSIS OF OPTIONS

Analysis

Option A scores poorly when measured against all Strategic Goals except Fiscal Responsibility. Clearly, the only redeeming attribute of this Option is that it is the least expensive first-cost solution. This Option scored lower in that category when compared to Option C, because the long-term Operational Costs and Life Cycle costs of this Option are by far the highest of all the Options. This Option is not perceived by the Stakeholders as adequately addressing Modernize High School Facilities, because it would keep much of the old building. Even after renovation, the basic bones of the old building would inhibit the curriculum delivery compared to Options B or C.

This Option would be extremely difficult to implement. Temporary Facilities would be required, and the curriculum would have to be altered to do without spaces like the Gymnasium and Auditorium for long periods of time. Food service delivery would also be interrupted for an extended period of time, forcing the District to either make alternative arrangements or suspend lunch service. Maneuvering the site during construction would be almost impossible, as what little open space would remain between the old and new portions of the building would need to be utilized for construction equipment, staging, temporary trailers, and lay-down area. It is estimated that construction could take up to 4 years, and would disrupt the educational experience of an entire class of TJHS students during their entire high school career. This Option would also require the construction of new retaining walls on the site, and the final site plan would have no more parking than what exists today. For all of the above reasons, this Option was the lowest scoring of all, and was judged by the Stakeholders to be not feasible when compared to Options C and B.

Option A - Renov. and Additions to TJHS

February 21, 2013

West Jefferson Hills School District

Preliminary Cost Model

Option A - Renovations and Additions to TJHS Item	Area (SF)	Unit Cost/SF	Total Cost	Notes
Building Construction Cost				
New Construction				
Regular Classrooms	10,000	$195	$1,950,000	850 SF minimum
Specialty Classrooms/Labs	9,000	$205	$1,845,000	1000-1200 SF minimum
Auditorium/Music Suite	16,000	$255	$4,080,000	
Library/Media Center	4,000	$230	$920,000	
Gymnasium/Athletic Facilities	18,700	$195	$3,646,500	Inc. Locker Rooms
Natatorium and Support Space	13,400	$230	$3,082,000	
Cafeteria	7,200	$230	$1,656,000	
Full Service Kitchen	6,500	$305	$1,982,500	
Administration	5,000	$180	$900,000	
Building Support/Toilet Rooms/Mechanical	1,500	$230	$345,000	
Sitework	1	$3,000,000	$3,000,000	Allow. Inc Retaining Walls
Subtotal New Construction	**91,300**	**$256**	**$23,407,000**	
Demolition and Renovation Area				
Asbestos Abatement	10,000	$4.00	$40,000	Selective Abatement
Selective Building Demoltion	37,100	$10	$371,000	
Temporary Facilities	1	$500,000	$500,000	Allow
Renovation Costs	174,623	$150	$26,193,450	Blended SF Cost
Subtotal Demo and Renovation	**174,623**		**$27,104,450**	
Contingencies and Supplementary Cost				
Project Contingency		10%	$2,340,700	
Escalation		6%	$1,404,420	to Mid-Point Const. (3.5Yr)
Insurance		Allow	$1,300,000	Estimate (OCIP)
Permits		Allow	$400,000	Negotiate w/Jeff Hills
Bonds		2%	$468,140	Estimate
Subtotal Contingencies and Supplementary Cost			**$5,913,260**	
Total Building Construction Cost			**$56,424,710**	
Soft Costs				
Survey		Allow	$17,000	Estimate
Civil Engineering		Allow	$150,000	Estimate
Land Development Planning Approval		Allow	$20,000	Estimate
Food Service Equipment Consulting		Allow	$20,000	Estimate
Soils Testing/Drilling/Report		Allow	$70,000	Estimate
Site Environmental Phase I		Allow	$0	Estimate
Environmental Engineering (Asbestos)		Allow	$20,000	Estimate
Property Acquisition		Allow	$0	
Legal Fees		Allow	$100,000	Estimate
CM Fee		3.0%	$1,692,741	3.5 Year CA Phase
A/E Fee		6.75%	$3,808,668	3.5 Year CA Phase
Financing Costs		Allow	$1,300,000	Estimated
PlanCon Reimbursement (Credit)		Allow	$0	Moratorium in Place
Subtotal Soft Costs			**$7,198,409**	
Estimated Total Project Cost			**$63,623,119**	

Recommendations

Asset **Protection**

In general, the condition of the District's physical plant is quite good. Three of the five buildings in the District have been renovated within the last ten years, and those renovations have, for the most part, stood the test of time. The District maintenance and custodial staff does a good job of keeping facilities clean and functional, despite the fact that some building systems have outlived their useful lifespan.

A review of the Existing Conditions Report reveals minor functional issues at **Gill Hall Elementary**, **McClellan Elementary**, and **Pleasant Hills Middle Schools**, which have been/will be addressed by the maintenance staff. There are, however, some major deficiencies at the above three buildings that can be attributed to the following:

- Major building systems were not ready for replacement when the buildings were renovated, such as the roofs at Gill Hall and McClellan (McClellan was subsequently replaced in 2009).
- Conscious decisions were made to forgo or defer parts of the scope of work, such as the decision not to air condition the three buildings at the time of renovation.
- Advancements in systems or technology have rendered the systems that were state-of-the-art when the buildings were renovated as obsolete by today's standards. Two examples of this are the technology systems at all three buildings, and the lighting technology at Gill Hall and McClellan.

For these buildings, we recommend that all of the Asset Protection Projects identified in this Report be implemented on a phased basis, as funding becomes available. These projects are summarized as follows:

- Technology Upgrades at all Buildings
- Roof Replacement at Gill Hall and Jefferson Elementary Schools
- Replacement of Stadium Turf and Track
- Replacement of Main Gymnasium Bleachers at TJHS
- Replacement of Light Fixtures and/or Ballasts at Jefferson, Gill Hall, and McClellan Elementary Schools
- Air Conditioning at all Buildings
- Repair Concrete Retaining Wall at Pleasant Hills Elementary School
- Site Circulation and Parking Upgrades at Gill Hall Elementary School

In terms of prioritization, we recommend that the District continue to implement the phased **Technology Upgrades** as quickly as possible, since this system directly impacts student and teacher productivity on a daily basis. We recommend that the **Roofing at Gill Hall Elementary** be replaced during the summer of 2013, since this roof is quite old, and it leaks in multiple locations with every rain event. Roof leaks convey a sense of "decay", with which the District does not want to be associated.

RECOMMENDATIONS

The **Artificial Turf at the Stadium** cannot be preserved in a safe and responsible manner for another season. The loss of blade fiber height makes it difficult to contain the rubber/sand aggregate, which caused issues in 2012, especially in conjunction with significant rain events. We recommend that the Turf be replaced before the next football/soccer season. It is an option to defer the replacement of the Track to 2014, if loss of the entire 2013 summer season on the stadium field is unacceptable to the District.

The **Bleachers in the Main Gymnasium** at Thomas Jefferson High School are original to the building, and are in poor condition. We recommend that the District address this issue during the summer of 2013, so as to eliminate inconvenience and liability regarding this issue after the 2012-13 school year. The new bleacher system should be designed in such a way that it could be relocated to replace the bleachers in Pleasant Hills Middle School if/when the existing TJHS is replaced. If this is not practical, then the new bleachers from the existing TJHS could be sold to another district at the time the TJHS is replaced, to recover some of the cost of this project.

We recommend that the District **Repair the Concrete Retaining Wall at Pleasant Hills Middle School** during the summer of 2014. This wall has experienced cracking and spalling of the concrete surface due to water infiltration from the sleeves of the guard rail mounted on top of it. This guard rail system is a poor design, which must be corrected in conjunction with repairing the wall. This work must eventually be done, but it can be deferred until 2014. The District maintenance staff have performed temporary patching on the sidewalks and wall near the sleeves, which should buy time until a proper long-term repair can be completed. There are several possible design solutions (and associated price points) for this work, which must be carefully vetted and reviewed with the District. As such, there is not sufficient time to execute this project during the summer of 2013.

Jefferson Elementary School was constructed in 1990, making it over 20 years old at the time of this study. It has not been significantly renovated since it was built. This study has identified several major items of asset protection work recommended for that building: **Air Conditioning, Roof Replacement, and Lighting/Energy Upgrades**. These items of work should be combined if possible to create economy of scale, and take advantage of lower contractors' overhead and mobilization costs. In order to facilitate the District's funding strategy for the High School Modernization project, we recommend that this work be deferred until the High School project is completed. At that time, it would be wise to re-evaluate the scope of required work in this building and either execute these projects, or consider a more comprehensive PlanCon reimbursable project for the building (should PlanCon or some similar program be reinstated by the Commonwealth).

RECOMMENDATIONS

We recommend that the Technology Upgrades be decoupled from these other areas of work, and combined instead with the Technology Upgrades at Pleasant Hills Middle School. The technology work has too much impact on the functionality of the school to defer it until the District can afford to complete the larger scope of work on this building. It is also possible that the deterioration of the roof at Jefferson Elementary School could accelerate, which would mandate rescheduling that project to occur sooner.

We recommend that **Air Conditioning and Lighting/Energy Upgrades at Gill Hall and McClellan Elementary Schools** be combined and executed at a time after the High School Modernization project is completed. We also recommend that the Parking and Site Circulation Upgrades at Gill Hall Elementary be deferred until that time. While these projects will improve the quality of life for the students and staff, they are ostensibly elective projects, not immediate needs. By deferring the Air Conditioning and Lighting Upgrades at those buildings, the District is deciding that no new elective work will be done on those buildings until they are eligible within the PA Department of Education's 20-year window for renovation.

Growth **Options**

Option 4 was judged the most efficient and practical Option for addressing potential future growth in the District. This Option includes modifying the District Grade Structure to relocate the 5th Grade from the Elementary Schools to Pleasant Hills Middle School. To make space in the Middle School for the 5th Grade, the 8th Grade would be relocated from the Middle School to a new 8th Grade Addition/Wing at a new Thomas Jefferson High School.

We recommend that the District adopt Option 4, and **incorporate schematic planning for a future 8th Grade Addition** into the design of a new High School. Option 4 may not be viable unless the District chooses to construct a new High School. If the District chooses instead to undertake a renovation and enlargement of the existing Thomas Jefferson High School, then the feasibility of this Option must be re-evaluated. If Option 4 is not feasible in conjunction with a renovation of the existing High School building, then we recommend that the District implement Option 1 (construction of additions at Gill Hall and Jefferson Elementary Schools), as this was the second highest scoring Option.

It must be noted that there is **no need to implement any of the Options** studied and documented in this Report at this time. The District currently has capacity to absorb some growth at all buildings through redistricting. At such a time that excess growth occurs, the District may revisit these, and perhaps other, Options to determine what best meets the needs of the District. Finally, we recommend that the District **adopt a Policy to review district feeder patterns on a 5-year basis**, to ensure that the elementary school population is balance across all three buildings. We also recommend that this regular review be incorporated into the District's Strategic Plan, publicized on the District web site, and noted on District enrolment forms.

RECOMMENDATIONS

High School Modernization **Options**

We recommend that the District implement **Option C –** the construction of a new Thomas Jefferson High School building on a new site. The District is currently negotiating to purchase a 151 acre parcel of land along Old Clairton Road, across from the existing District Administration Building. This parcel is ideal in size, location, and topography for a new high school and associated site infrastructure, provided the District can come to an amicable agreement on the purchase terms with the current property Owner. If purchase of this property is judged to be not in the best interests of the District, then another property, suitable in size, location, and topography, should be found and purchased.

We do not believe it is in the short-term or long-term best interests of the District to renovate the existing building (Option A). Decisions made during the early 1990's renovation project (example: creating many classrooms without windows, and poor corridor circulation patterns) compromised the layout of the building, and cannot practically be undone. The "big box" spaces of the building, such as the Auditorium and the Gymnasiums, cannot be practically enlarged. Those spaces must be demolished and replaced if the project were to approach parity with construction of a new building. As such, much of the functional program of the building would be compromised for as long as 4 years of phased construction. This would adversely impact an entire class of high school students for their entire time at Thomas Jefferson High School. That would not be educationally sound planning for those students.

Option B represents a slight compromise between building new and renovating, by building new on the existing site. While this may be a workable option if the District fails to secure a suitable property to implement Option C, the inconvenience and disruption to the site and educational program by construction activities would be a significant burden on the High School for an extended period of time. Also, this is a more costly option than Option C, despite the fact that no property acquisition cost is required.

The existing Administration Building is nearly 40 years old, and has never been significantly renovated. The systems and building envelope of the building will begin to fail in the next decade. As such, we recommend that the District **incorporate space into the construction of a new Thomas Jefferson High School building to accommodate the District Administration offices**. The additional construction cost to incorporate the District Administration will not exceed the cost to renovate and maintain the existing Admin Building over the next ten years. In addition, the Admin, if incorporated into the new building, should not require additional capital improvements for 20+ years. The District will also be eliminating one physical plant site, which will no longer need to be maintained, and achieving operational efficiency by improving the proximity of the Administration to the High School Administration, Faculty, Students and Staff.

RECOMMENDATIONS

Summary: In light of the above, we recommend that the District implement Option C – build a new Thomas Jefferson High School building, which includes the District Administration program, and maintain the existing High School and Administration buildings in a safe and functional condition for the duration of the construction of the new building.

We also recommend that the existing High School Stadium, Field House, and Softball Field be retained on the current High School site, and that the existing High School building be demolished after the new building is constructed and occupied. We recommend that the District construct a combination of new paved parking and practice fields on the site after demolition.

ID	Task Name	Duration	Start	Finish	% Complete
1	**West Jefferson Hills School District - District-wide Master Plan**	**3315 days**	**Mon 1/9/12**	**Fri 9/20/24**	**5%**
2	**Pre-Design Phase (Strategic Design Process)**	467 days	Mon 1/9/12	Tue 10/22/13	**58%**
3	Assist in Elementary Redistricting Process	4 mons	Mon 1/9/12	Fri 4/27/12	100%
4	Project Kickoff Meeting	5 days	Mon 5/14/12	Fri 5/18/12	100%
5					
6	**Existing Conditions Analysis (Where are you now?)**	**67 days**	**Mon 5/21/12**	**Tue 8/21/12**	**100%**
7	Existing Data Gathering and Existing Conditions Analysis	10 days	Mon 5/21/12	Fri 6/1/12	**100%**
8	Evaluate Demographic Study	10 days	Mon 5/21/12	Fri 6/1/12	100%
9	Gather Past Studies/Drawings/etc.	10 days	Mon 5/21/12	Fri 6/1/12	100%
10	Site Visit: Thomas Jefferson High School	2 days	Mon 5/21/12	Tue 5/22/12	100%
11	Site Visit: Pleasant Hills Middle School	1 day	Wed 5/23/12	Wed 5/23/12	100%
12	Site Visit: Jefferson Elementary School	1 day	Thu 5/24/12	Thu 5/24/12	100%
13	Site Visit: Gill Hall / McClellan Elementary Schools	1 day	Fri 5/25/12	Fri 5/25/12	100%
14	Site Visit: Other District Facilities	1 day	Mon 5/28/12	Mon 5/28/12	100%
15	Prepare Existing Conditions Report	10 days	Tue 6/5/12	Mon 6/18/12	100%
16	Presentation of Existing Conditions Report to Board (Wkshop Meeting)	1 day	Tue 8/21/12	Tue 8/21/12	100%
17	**Visioning/Consensus Building (Where do you want to go?)**	**67 days**	**Mon 10/15/12**	**Tue 1/15/13**	**100%**
18	**Knowledge Base Workshops**	**8 days**	**Mon 11/12/12**	**Wed 11/21/12**	**100%**
19	Knowledge Base Workshop (First Community Workshop)	3 days	Mon 11/12/12	Wed 11/14/12	100%
20	Knowledge Base Workshop (Board and Administration)	5 days	Thu 11/15/12	Wed 11/21/12	100%
21	**Macro Programming/Curriculum Analysis (Building Admin)**	**5 days**	**Mon 10/15/12**	**Fri 10/19/12**	**100%**
22	Thomas Jefferson High School	1 day	Mon 10/15/12	Mon 10/15/12	100%
23	Pleasant Hills Middle School	1 day	Tue 10/16/12	Tue 10/16/12	100%
24	Jefferson Elementary School	1 day	Wed 10/17/12	Wed 10/17/12	100%
25	Gill Hall Elementary School	1 day	Thu 10/18/12	Thu 10/18/12	100%
26	McClellan Elementary School	1 day	Fri 10/19/12	Fri 10/19/12	100%
27	Documentation of Workshop/Interview Data	10 days	Thu 11/22/12	Wed 12/5/12	100%
28	Review w/WJHSD and Define Strategic Goals	5 days	Thu 12/6/12	Wed 12/12/12	100%
29	Presentation of Goals and Knowledge Base Data to Board	1 day	Tue 1/15/13	Tue 1/15/13	100%
30	**Options Development/Analysis (How are you going to get there?)**	65 days	Wed 1/16/13	Tue 4/16/13	**100%**
31	Develop Options (Graphic and Narrative Form)	8 days	Wed 1/16/13	Fri 1/25/13	100%
32	Develop Cost Models and Financing Strategies (Estimating)	1 wk	Mon 1/21/13	Fri 1/25/13	100%
33	Presentation of Options to Administration	1 day	Fri 1/25/13	Fri 1/25/13	100%
34	Incorporate Administration Feedback	5 days	Mon 1/28/13	Fri 2/1/13	100%
35	Presentation of Options to Board	1 day	Mon 2/4/13	Mon 2/4/13	100%
36	Analyze Options and Prepare Priority Matrix	13 days	Mon 2/11/13	Wed 2/27/13	**100%**
37	Board Participation in Evaluation Matrix	2 wks	Mon 2/11/13	Fri 2/22/13	100%
38	Finalize Data from Evaluation Process	3 days	Mon 2/25/13	Wed 2/27/13	100%
39	Incorporate Board Feedback	4 days	Thu 2/28/13	Tue 3/5/13	100%
40	Presentation to Board (Evaluation Matrix)	1 day	Mon 3/18/13	Mon 3/18/13	100%
41	Prepare Final Report Document	4 wks	Tue 3/19/13	Mon 4/15/13	100%
42	Submit Preliminary Copy of Final Report	1 day	Tue 4/16/13	Tue 4/16/13	100%
43	**Review and Adoption**	**135 days**	**Wed 4/17/13**	**Tue 10/22/13**	**0%**
44	Board and Administrative Review Period	3.5 mons	Wed 4/17/13	Tue 7/23/13	0%
45	Public Review and Comment Period	3 mons	Wed 5/29/13	Tue 8/20/13	0%
46	Edit and Update Report	1 mon	Wed 8/21/13	Tue 9/17/13	0%
47	Adoption by WJHSD of Master Plan and Preferred Option(s) (Vtg Mtg)	1 day	Tue 10/22/13	Tue 10/22/13	0%
48					
49	**Option C - New Thomas Jefferson High School**	**1415 days**	**Wed 7/24/13**	**Tue 12/25/18**	**0%**
50	Construction Manager Selection Process	3 mons	Wed 7/24/13	Tue 10/15/13	0%
51	Hire Construction Manager (Board Voting Meeting)	1 day	Tue 10/22/13	Tue 10/22/13	0%
52	Architect Selection Process	3 mons	Wed 11/20/13	Tue 2/11/14	0%
53	Hire Architect (Board Voting Meeting)	1 day	Tue 2/25/14	Tue 2/25/14	0%
54	Preliminary Site Due Diligence	110 days	Wed 10/23/13	Tue 3/25/14	**0%**
55	Site Consultant Selection (Survey, Environmental, Geotechnical)	1.5 mons	Wed 10/23/13	Tue 12/3/13	0%
56	Hire Site Consultants (Board Voting Meeting)	1 day	Tue 12/3/13	Tue 12/3/13	0%
57	Boundary, Utility, Topo Survey	2 mons	Wed 12/4/13	Tue 1/28/14	0%
58	Phase I Environmental Study	1 mon	Wed 1/1/14	Tue 1/28/14	0%
59	Phase II Environmental Study	2 mons	Wed 1/29/14	Tue 3/25/14	0%
60	Preliminary Geotechnical Borings and Report	2 mons	Wed 1/1/14	Tue 2/25/14	0%
61	Educational Planning (WJHSD)	140 days	Wed 12/4/13	Tue 6/17/14	**0%**
62	Finalize District Strategic Plan	7 mons	Wed 12/4/13	Tue 6/17/14	0%
63	Tour Other High School Facilities	2 mons	Wed 2/26/14	Tue 4/22/14	0%
64	Develop/Define Desired High School Curriculum	3 mons	Wed 2/26/14	Tue 5/20/14	0%
65	Develop Educational Program	2 mons	Wed 4/23/14	Tue 6/17/14	0%
66	Macro Programming and Pre-Design Phase (Architect)	60 days	Wed 6/18/14	Tue 9/9/14	**0%**
67	Develop and Refine Preliminary Space Program	1 mon	Wed 6/18/14	Tue 7/15/14	0%
68	Cost Modeling/VE Based on Space Program and Site Data	1 mon	Wed 7/16/14	Tue 8/12/14	0%
69	Finalize and Approve Space Program	1 mon	Wed 8/13/14	Tue 9/9/14	0%
70	Schematic Design Phase	3 mons	Wed 9/10/14	Tue 12/2/14	0%
71	Design Development Phase	4 mons	Wed 12/3/14	Tue 3/24/15	0%
72	Construction Documents Phase	10 mons	Tue 3/24/15	Mon 12/28/15	0%
73	Bidding/Award Phase	2 mons	Tue 12/29/15	Mon 2/22/16	0%
74	Permitting and Mobilization	2 mons	Tue 2/23/16	Mon 4/18/16	0%
75	Construction Administration Phase	30 mons	Tue 4/19/16	Mon 8/6/18	0%
76	**Substantial Completion / Owner Move-in (Aug 2018)**	**21 days**	**Tue 8/7/18**	**Tue 9/4/18**	**0%**
77	Punch List and Closeout	4 mons	Wed 9/5/18	Tue 12/25/18	0%
78	**Final Completion**	**1 day**	**Wed 12/19/18**	**Wed 12/19/18**	**0%**
79					
80	**Asset Protection Projects**	**3019 days**	**Tue 2/26/13**	**Fri 9/20/24**	**0%**
81	**Technology Upgrades at PHMS and Jefferson ES**	155 days	Mon 3/4/13	Fri 10/4/13	**0%**
82	Design and Bidding	3 mons	Mon 3/4/13	Fri 5/24/13	0%
83	Construction	4.5 mons	Mon 6/3/13	Fri 10/4/13	0%
84	**TJHS Bleacher Replacement**	80 days	Mon 5/6/13	Fri 8/23/13	**0%**
85	Design and Bidding	2 mons	Mon 5/6/13	Fri 6/28/13	0%
86	Construction	2 mons	Mon 7/1/13	Fri 8/23/13	0%
87	**TJHS Stadium Turf and Track Replacement**	111.5 days	Tue 2/26/13	Wed 7/31/13	**0%**
88	Design and Bidding	3.5 mons	Tue 2/26/13	Mon 6/3/13	0%
89	Construction	7.5 wks	Mon 6/10/13	Wed 7/31/13	0%
90	**Roof Replacement at Gill Hall ES**	120 days	Tue 3/26/13	Mon 9/9/13	**0%**
91	Design and Bidding	3 mons	Tue 3/26/13	Mon 6/17/13	0%
92	Construction	3 mons	Tue 6/18/13	Mon 9/9/13	0%
93	**Technology Upgrades at McClellan ES and Gill Hall ES**	194 days	Tue 1/7/14	Fri 10/3/14	**0%**
94	Design and Bidding	4 mons	Tue 1/7/14	Mon 4/28/14	0%
95	Construction	4.5 mons	Mon 6/2/14	Fri 10/3/14	0%
96	**Retaining Wall Repair at PHMS**	149 days	Tue 2/4/14	Fri 8/29/14	**0%**
97	Design and Bidding	3 mons	Tue 2/4/14	Mon 4/28/14	0%
98	Construction	3 mons	Mon 6/9/14	Fri 8/29/14	0%
99	**Roof Replacement at Jefferson ES**	150 days	Mon 2/3/20	Fri 8/28/20	**0%**
100	Design and Bidding	3 mons	Mon 2/3/20	Fri 4/24/20	0%

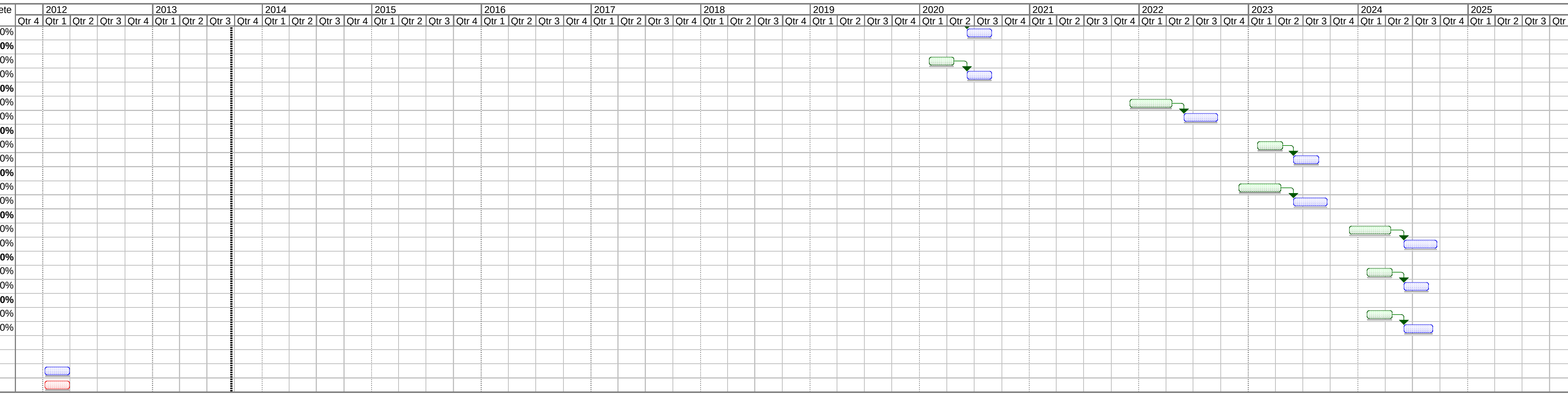
Thu 9/19/13 2:53 PM

West Jefferson Hills School District

10 Year Facilities Master Plan Schedule - September 1, 2013

JC PIERCE llc

ID	Task Name	Duration	Start	Finish	% Complete
101	Construction	3 mons	Mon 6/8/20	Fri 8/28/20	0%
102	**Lighting/Energy Upgardes at Jefferson ES**	150 days	Mon 2/3/20	Fri 8/28/20	**0%**
103	Design and Bidding	3 mons	Mon 2/3/20	Fri 4/24/20	0%
104	Construction	3 mons	Mon 6/8/20	Fri 8/28/20	0%
105	**Air Conditioning at Jefferson ES**	208 days	Fri 12/3/21	Tue 9/20/22	**0%**
106	Design and Bidding	5 mons	Fri 12/3/21	Thu 4/21/22	0%
107	Construction	4 mons	Wed 6/1/22	Tue 9/20/22	0%
108	**Lighting/Energy Upgrades at Gill Hall ES and McClellan ES**	146 days	Wed 2/1/23	Wed 8/23/23	**0%**
109	Design and Bidding	3 mons	Wed 2/1/23	Tue 4/25/23	0%
110	Construction	3 mons	Thu 6/1/23	Wed 8/23/23	0%
111	**Air Conditioning at Gill Hall abd McClellan ES**	210 days	Thu 12/1/22	Wed 9/20/23	**0%**
112	Design and Bidding	5 mons	Thu 12/1/22	Wed 4/19/23	0%
113	Construction	4 mons	Thu 6/1/23	Wed 9/20/23	0%
114	**Air Conditioning at PHMS**	210 days	Mon 12/4/23	Fri 9/20/24	**0%**
115	Design and Bidding	5 mons	Mon 12/4/23	Fri 4/19/24	0%
116	Construction	4 mons	Mon 6/3/24	Fri 9/20/24	0%
117	**Parking and Site Circulation Upgrades at Gill Hall ES**	147 days	Thu 2/1/24	Fri 8/23/24	**0%**
118	Design and Bidding	3 mons	Thu 2/1/24	Wed 4/24/24	0%
119	Construction	3 mons	Mon 6/3/24	Fri 8/23/24	0%
120	**Roof Replacement at PHMS**	157 days	Thu 2/1/24	Fri 9/6/24	**0%**
121	Design and Bidding	3 mons	Thu 2/1/24	Wed 4/24/24	0%
122	Construction	3.5 mons	Mon 6/3/24	Fri 9/6/24	0%
123					
124	**Legend:**				
125	Consultants - Primary Driver				
126	West Jefferson Hills School District - Primary Driver/Involvement				



Demographic School Analysis: Population Projections for the West Jefferson Hills School District

Shelby Stewman
Stewman Demographics
&
Professor of Demography and Sociology
Carnegie Mellon University

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Demographic School Analysis: Population Projections For the West Jefferson Hills School District

This analysis will consist of three parts:

I. An overview describing the following:

Analysis that focuses on six significant demographic and economic processes in the last decade within the school district. The six processes, described in terms of the effects on the expected number of students, are as follows:

(1) a continuing decline in the number of births per multi-year period from 1990-94 to 1995-99 to 2000-04 to 2005-08. It is currently 80 per year below that of 1990-94, the period in which the current high school students were born;
(2) a Kindergarten entry and Grade 12 exit process per year, reflecting the significance of net in-migration and housing;
(3) additional delayed childbearing into the thirties—both the 30-34 and 35-39 age cohorts;
(4) a decrease in the number of women in all key age cohorts from 20-39; this is associated with the aging of the baby bust and its decreased births, yielding an echo bust;
(5) a substantial decrease in parochial/private school enrollments at the elementary level for students residing in the school district; and
(6) an increase in housing construction (especially single family dwellings) prior to the sub-prime mortgage fallout and a decrease in current housing construction, but with a rather massive backlog once the housing market recovers.

The assessment of these changes is important in determining the nature of demographic modeling to use and in the selection of parameters for such models.

II. Development and analysis of grade specific school district projections for the ten-year period, 2010-2019.

The first three projections use four-year retention ratios under alternative fertility levels. Retention ratios in this scenario have a baseline level of "growth" embedded in them. The fourth scenario adds the the direct effects of growth due to new housing; these growth effects are beyond those in the recent baseline level of construction.

III. Development and analysis of areal specific district student projections for the three (3) elementary schools over the ten-year period, 2010-2019.

These projections use the most recent four-year retention ratios, and the specific elementary school attendance area's births and new housing. These disaggregate projections map to the more aggregate projections of Scenario IV and are referred to as Scenario V.

I. Overview

Six (6) major demographic and economic processes are examined with respect to projecting the expected shifts in student population in the West Jefferson Hills School District (SD) over the next ten (10) years. The first major factor is a continued decrease in the number of births per year—from an average of 176 per year from 2000-04 to an average of 159 per year from 2005-08. Moreover, the 159 births per year is substantially below (-80) the 1990-94 average cohort of 239 births per year, who reached Kindergarten in 1995-99. It is worth noting that the 1992 birth cohort is currently in Grade 12. A second major factor may be seen if we momentarily assume migration is zero. In this case, any change in the total population is due to the replacement of Grade 12 students who exit (graduation) by Kindergarten students who enter. Examining this process over the last decade indicates rather large-scale declines would have occurred without new housing construction and considerable in-migration (including local inflows of parochial/private and charter school students). The third and fourth factors pertain to fertility and age structure effects—more specifically, delayed childbearing into the 30's and an echo of the baby bust cohorts of the 1970's. The fifth factor is a rather substantial decrease in the enrollment of parochial/private school elementary enrollments. The sixth major factor affecting the number of expected students is the level of growth stemming from housing development. The level of housing development from 2002-08 has averaged 50 new homes per year. The analysis to follow, preceding the student population projections, is important both in terms of determining the nature of the demographic modeling to use and in the selection of parameters for such models. We begin by taking an in-depth look at the fertility side of the process, since its impacts are becoming particularly apparent at the elementary and high school levels.

The annual number of births to West Jefferson Hills School District residents from 1990-2008 and by period is shown in Table 1. From 1990 to1994, the average number of births was 239 per year. In 1995-1999, however, a sharp decrease is observed—to an average of 189 per year, a decrease of 50 per year. In 2000-2004, births continued to drop--to 176 per year. Moreover, if we take the four most recent years, 2005-2008, the average number of births per year is presently 159, yet another drop and 80 fewer than in 1990-94. Thus, while there have certainly been oscillations in births on a yearly basis, the overall trend is clear—that of a continuing decline over the last 19 years. This includes the last four years, 2005-2008, whose birth cohorts have yet to enter kindergarten.

Tables 2 and 3 reveal part of the reason for the drop in births—delayed childbearing. As can be seen at the top of Table 2, the largest number of births in 1990-94 was to mothers in their early thirties (30-34). Thus, by 1990-94, we can see that the first wave of delayed childbearing has already occurred. By 2000-04, we can see a drop of 6% in the percentage of births in the 25-29 age cohorts and an increase of 6% in the percentage of births in the 35-39 age cohorts. (See also Table 3, lower panel for percentages.) In the most recent period, 2005-08, the gain in the percentage share in the 35-39 age cohorts is reduced by 5% (and hence only a 1% increase over 1990-94), but the loss in the percentage share of births in the 25-29 age cohorts remains 5% below that of 1990-94. Moreover, the share in the 30-34 age cohort increased by 3%. Taken together, the data for births since 2000 suggest that the second stage of delayed childbearing is occurring—into the late thirties (35-39) and early forties (40-44), as well as slightly more concentrated in the early thirties (30-34). The percentage share of births to mothers in their twenties decreased from 45% to 41% from 1990-94 to 2005-07, with a 5% drop in the 25-29 age cohort. Concomitantly, the percentage share in the thirties increased from 51% to 54% and, if we also add the forties, it increased from 52% to 57%--indicative of the second stage of delayed childbearing. Table 3 provides the percentage distributions by year and period, with the last row at the bottom of the table again indicating somewhat further concentrations of births in the 30-34 age cohorts and increases in cohorts above age 34. The largest change was in the decrease in the 25-29 age cohort (-5%). Tables 2A, 2B and 2C provide data comparable to Table 2 for each municipality—Jefferson Hills, Pleasant Hills and West Elizabeth.

A second process affecting the decreases in births is the shifting age structure of reproductive age females. Table 4 provides the data for the changes in the female population for ages 15 to 44 by municipality and the overall school district. Between 1990 and 2000, basically the only increases in the reproductive age female cohorts were in the teens (15-19) or forties (40-44). As may be seen at the bottom of Table 4, all the key reproductive age cohorts had decreases and for the women in their twenties, the population decreases were over 40%. In the age cohort where almost 40% of births occur (30-34), the decrease in the number of women residing in the school district dropped by 33%. It was only in the 35-39 age cohort that the decrease was below 30% and here it was 12%. What is going on? Is this drop in the population of the key reproductive age cohorts peculiar to the West Jefferson Hills School District? To Allegheny County? To Western Pennsylvania? To Pennsylvania in general? Or is this a more general phenomenon in the United States?

Table 5 provides data for the United States, Pennsylvania and Allegheny County for five-year age cohorts from ages 0 to 44 between 1990 and 2007, using US Census Bureau data. At the national level, there were drops in the 20-24, 25-29 and 30-34 female age cohorts (See Change by Age Cohort Across Time panel) from 1990 to 2000. This represents a shift from the baby boom to the baby bust as fertility levels changed from total fertility rates, where on average, mothers had 3.7 children in 1956 to 1.7 children in 1976. The low point in fertility rates in the mid-1970's is referred to as the baby bust. To illustrate, there were 21.1 million children born between 1955 and 1959, at the height of the baby boom and 16.5 million births between 1975 and 1979 the trough of the baby bust, a decrease of 4.6 million births. In 1990 the peak of the baby boom was 30-34; in 2000 the trough of the baby bust was 20-24. Thus, what is being observed in the West Jefferson Hills School District between 1990 and 2000 is a national process as well. The baby bust children have matured to key reproductive ages and they have far fewer numbers than the prior baby boom cohorts. Even with national level legal immigration of almost a million per year since 1990, not all are within a five-year cohort and thus the transition from the baby boom to baby bust process is still dominant and observable at the national level in the key reproductive age cohort shifts between 1990 and 2000.By 2005-07, only the 30-34 age cohort still reflects the dominance of the baby bust at the national level. In Pennsylvania, on the other hand, the evidence of the baby bust is evident in both the 2000 and 2005-07 cohort change data in the lower panel of Table 5. In 2000, there are cohort decreases in the 20-24, 25-29 and 30-34 age cohorts. By 2005-07, there are cohort decreases in the 25-29, 30-34 and 35-39 age cohorts. As for Allegheny County, between 1990 and 2000, there are cohort decreases in all age cohorts from 15-39; only the 40-44 age cohort has increases. This parallels the West Jefferson Hills School District, except that in the school district, there is an increase in the 15-19 age cohort. In 2005-07, in Allegheny County all age cohorts show decreases except the 20-24 age cohort, which shows a 3% increase.

A different way of looking at these same data is in terms of aging in place versus net-migration. To the extent that we follow an age cohort across time, it can only increase via net in-migration and decrease by net out-migration, since survival rates are very high at these ages. The second cohort change panel is on page 2 of Table 5. At the national level, there are increases in all age cohorts, but one (and this is probably an error) and such increases reflect immigration. In Pennsylvania, in all age cohorts above age 9, there is net out-migration. In Allegheny County, the same observation holds for all age cohorts above age 14. As will be show subsequently, however, this result may not hold for the West Jefferson Hills School District due to housing construction.

Given that a fundamental shift in the age structure is taking place nationally as well as locally, how do the shifts in the school district map to the decreased births? Table 6 provides these data. The closest match is at the 25-29 age cohort, where the percentage drop in the number of women is almost identical to the percentage drop in births. Where the births are greater or lesser than the population change in the number of reproductive females (NRAF), there is behavioral change. Thus, while there are decreases in both age cohorts in the thirties, in the 30-34 age cohort, the drop in births is less than the drop in population; in the 35-39 age cohort there is actually an increase in the percentage share of births in spite of the drop in population. As for the 40-44 age cohort, the births are few, but the increased percentage is far above that of the population change. At the other end of the age spectrum, teens are increasing in population, but their births are dropping, while the 20-24 age cohort has the largest percentage population drop of all cohorts, but the percentage drop in births is much less. In general, these data suggest no behavioral change in the 25-29 age cohort. Rather, the decreases in births are due to a decrease in the number of women 25-29. For the age cohorts above 25-29, the data further support the behavioral change of delayed childbearing. For the 30-34 age cohort, however, the data suggest that the drop in births is due to both the drop in population and a continuation of the process of delayed childbearing. For the 20-24 age cohort, this table suggests an increase in fertility—that is, while births are dropping, they are above what would be expected due solely to the drop in the number of women 20-24. Finally, the drop in births to teens is counter to the slight uptick in births to teenagers nationally and is strongly in the opposite direction of the population change.

Finally, we note that the total fertility rate for the white population in the United States has been remarkably stable since 1973, as shown in Table 7. The range has been from 1.7 to 1.9 for the last 36 years. Thus, while we may observe a continuation of delayed child bearing, as we have above, the main driver for the number of births, given the stability in the total fertility rates, will continue to be the number of reproductive age women. This can change in two ways—(1) from large scale shifts in the population, as shown above, in respect to the baby boom and baby bust and (2) from net migration—in this case largely from new housing. It should be noted before continuing that given the stability in the total fertility rate for whites, we may expect in the more long-term, future echo booms and echo busts, as the oscillation in the relative size of the birth cohorts already born dampens down. For now, however, we will begin to examine the relative magnitude of net migration.

For the net migration of students from Kindergarten through Grade 12, we use an accounting system based on a hypothetical or counterfactual case. What we refer to here as "net migration" pertains to all entries and exits. Thus, we are using the term "migration" in a very restricted sense—migration into or out of the West Jefferson Hills School District student population. Actual migrants into the school from outside the three municipalities—whether from other parts of

Allegheny County, or other parts of Pennsylvania, or other states, or even from overseas, are in the count, but not distinguished from one another. We have no data with source of origin of the mover. The same holds for actual migration out of the school district—we do not know the destination. Additionally, we do not know the type of move if it is a local one. For example, a dropout at the high school level is certainly an exit and a first grader who did not attend kindergarten in the public school is an entrant. Both are counted as "migrating" out of or into the school. In short, "net migration," as used here refers to the difference of all exits and all entrants to the West Jefferson Hills School District. This "net migration" can be obtained using only enrollment data. Below, we will briefly describe the method.

Initially, we will illustrate the method with the total West Jefferson Hills School District. Then, we will also apply the method at each level—elementary, middle school and high school. First, we momentarily assume the counterfactual case of "what if no one migrated?" Then, the change in the student population (C) would be totally determined by the difference in the sizes of the Grade 12 graduates exiting at the end of year t-1 and the size of the Kindergarten class entering in year t. That is $C=K_t-G12_{t-1}$. We then compute the actual change in overall enrollment, denoted by E, where E=(Total Enrollment in t) - (Total Enrollment in t-1). Now, denote "net migration" as F. Then, E=C+F or F=E-C. Table 8 provides these data and outcomes for the West Jefferson Hills School District from 1991-2008. We will first illustrate the process by describing a single year and then we will discuss the overall result. For 2008-09, 254 seniors from the 2007-08 year exited (Column B, Table 8), while 187 new students entered Kindergarten (Column A). Thus, with no migration the student population would decline by 67 students (Column C = Column A - Column B or 187-256= -67). The actual change was +11 (Column E, which is shown as the difference in Column D of the population at t minus the population at t-1). Therefore, "net-migration" or gains via more entries than exits was 78 (Column F, which is (E-C) or [+11 - (-67)=+78]. That is, not only was the difference in K-G12 of 67 fewer students made whole by net replacements elsewhere, but an additional 11 students beyond this K-G12 exchange also entered, yielding a net in-migration of 78 students. This is also the case in most other years (14 out of 18), as shown in Table 8, Column F, there were also more entries than exits or a net in-migration. Over the last decade the net in-migration was an additional 256 students. Without migration, the school district would have declined by 421 students or 14% during the last decade and have a student population of 2,595. Instead, with the net in-migration, the actual or observed decrease was 165 or -5.5% and the 2008 student population was 2,851. Hence, we have a net migration of +256 or 8.5% of the original 1998 enrollment. This is a substantial number. Moreover, it is a summary measure and an outcome of much more dynamic processes at each educational level, which we will now examine.

We can also deduce the net migration at each educational level using similar logic. The results are shown in Tables 8A, 8B and 8C for the elementary, middle and high school levels, respectively. As shown in Table 8A net in-migration at the elementary level over the last decade, was 176 or 13.2%.

Without migration, the elementary enrollment would have decreased by 270 or 20.3%, whereas the actual enrollment decreased by 94 students or 7.1%. At the middle school level, migration is even more important, as shown in Table 8B. Without migration, the middle school enrollment would have dropped by 46.4%. Actual enrollment decreased by 128 students or 16.6%. Thus, net in-migration was 230 students, equivalent to 29.8% of the 1998 student population of 772 students. Together, the elementary and middle school levels had a net in-migration of 406 students, equivalent to 19% of the 1998 combined elementary and middle school student enrollment (2102 students). At the high school, in contrast to the elementary and middle schools, and even with the entries of parochial students at Grade 9, the net migration is negative, or in other words, a net out-migration. (See Table 8C.) Without migration, over the last decade, the high school enrollment would have increased by 207 students or 16.4%; however, actual enrollment increased by 57 or 6.2%. Hence, the net out-migration was 150 students or -16.4%. The summary of "net migration" by year and level is shown in Table 9. As can be seen in Table 9, the summary is obtained by adding net migration at all levels and the results in the overall column match those for the Kindergarten-Grade 12 exchange in Table 8.

Can we also obtain some information regarding migration of families with pre-schoolers? There are two sets of data pertaining to preschoolers. The first of these pertains to net migration from 1995 to 2000 and affecting Kindergarten enrollment for 2000 to 2005. Here, we compare the children less than 5 years of age in the 2000 census to the births occurring in the district from

1995 to 1999. The data are provided in Table 10. In contrast to the net in-migration at the elementary and middle school levels, discussed above, these data indicate neither net in- nor out-migration for pre-school children from 1995 to 2000. In other words, in-migration was equaled by out-migration. What about more recent years? We can ascertain the more current situation by looking at birth to Kindergarten enrollment ratios. We can also re-examine whether there was additional in- or out- migration since 2000 by families with pre-schoolers who entered Kindergarten from 2001 to 2008. To avoid yearly fluctuations and outliers, we take four-year averages. That is, we calculate the ratio of births in 1996-99 to the Kindergarten enrollment in 2001-2004 and the ratio of births in 2000-03 to the students enrolled in Kindergarten in 2005-08. These ratios are 1.043 and 1.101, respectively. Both ratios indicate a net in-migration of pre-school age children. Between 1996 and 1999, there were 740 births, but 772 children enrolled in Kindergarten 5 years later, indicating that an additional 32 pre-school students moved into the district (+4.3% or 772/740=1.043). Similarly, between 2000 and 2004, there were 700 births*, but 771 children enrolled in Kindergarten from 2005 to 2008. Hence, an additional 71 pre-school students moved in. These ratio data are particularly important in that they reveal a process that is running counter to the processes underlying the drop in births discussed earlier. Moreover, while births have continued to decrease, one countervailing force is that net in-migration of pre-school age children is increasing. We also

* For each year we calculate the eligible birth cohorts for Kindergarten as (B_{t-6} x .25)+(B_{t-5} x .75), since Oct 1 is the cutoff for entry at age 5. Thus, when we speak of the 2000-2003 birth cohorts here, the actual births are .25 X (1999 births) plus 2000, 2001 and 2002 births plus .75 X (2003 births). Similar logic is used for the 1992-95 and 1996-99 birth cohorts referred to here.

estimated the ratio of 1992-95 births to 1997-2000 Kindergarten enrollments, which is .835. There were 907 births from 1992-95 and 757 Kindergarten student enrollments from 1997-2000 or 150 fewer students enrolling than were born in the district. Ratios less than 1.0 are more difficult to interpret, since some pre-school children may not enter the public school until the first grade. However, examining the four subsequent year Grade 1 enrollments, there were only 30 additional students. Thus, the remaining 120 students were either attending alternative schools or had moved out of the district. It is undoubtedly both, but it is also likely that there was at least a net out-migration of pre-school age children between 1997 and 2000. Subsequently, after 2000, based on the birth to Kindergarten ratios, there has been a net in-migration of pre-schoolers. The sequential birth-to-Kindergarten ratios are as follows: .835, 1.043 and 1.101, increasing each four-year period and indicating net in-migration from 2001 to the present and most importantly, providing a counter balance to the decreases in births. Thus, for these 12 years we have the following:

Period (t, t+4)	Births (t-5, t-1)	K enrollment (t, t+4)
1997-2000	907	757
2001-2004	740	772
2005-2008	700	771

In short, even with the large drop in births from 1997-2000 to 2001-2004 of 167, Kindergarten enrollment increased by 15 due to a shift from pre-school out-migration to in-migration. Subsequently, births again dropped by 40, but Kindergarten enrollment was essentially stable (-1). Overall, for this period, net in-migration initially more than offset the decreases in births and most recently equally balanced the continued drop in births. Such in-migration is a major factor now and would appear to be largely driven by new housing development, which we will examine below.

Before turning to housing, however, we will first look at alternative schooling and the trends and oscillations in enrollment in the West Jefferson Hills School District, both of which are important in understanding the baseline from which to make the student projections over the next decade. Table 11 provides the available data for alternative school enrollment by level and type of schooling. While the number and educational level of home schooled students is available for the last nine years, only the total number of charter/cyber charter students is available. For the largest group—private/parochial students--the data are available only for the last four years and there is no distinction between elementary and middle school students. Making the best of what is available, we find the following: (1) the home schooled student population is rather small and is fairly stable from 2002-2008, averaging 16 per year; (2) the charter and cyber charter enrollment steadily increased from 2001 to 2006, but has declined in the past two years, 2007 and 2008 to a 20-23 range; (3) the private/parochial student enrollment declined in the three year period, 2005-2007, from 243 to 199 students, a decrease of 44; (4) taking the totals, where data is available for all three forms of alternative schooling, 2004-2007, we have very small increases in home schooled and charter-cyber charter school students, of 4 and 5, respectively; on the other hand, we have a much more substantial decrease in private/parochial students, 40 less; and (5) it is noteworthy all 40 fewer private/parochial students are at the elementary/middle school level, which could impact the expected number of such students entering the West Jefferson Hills School District at Grade 9 in the future.

We now take a direct look at the changes in the student population by level and overall for the last 20 years. Table 12 shows the number of students and the direction of change per year from 1990 to 2009. There are basically five major points that we wish to draw from this table. First, there was generally growth in the first decade from 1990 through 1999, with an increase of 348 students, as may be seen in the change row at the bottom panel of the table. The changes were -31, +139 and +240 at the elementary, middle and high school levels, respectively or in terms of percentage change, -2.5%, +23.4% and +30.8%, with the overall change of +13.3%. Secondly, the exception to the rule—the elementary level—is important in that it, too, was increasing until 1996. After 1996, there were seven consecutive years of decreases at the elementary level. Third, the most recent decade has experienced decreases in student enrollment of 100, with changes by level as follows: +42, -82 and -60 for the elementary, middle and high school levels respectively. Fourth, again the elementary level is the exception. Now, it is increasing, while the other two levels are decreasing. Moreover, it, too, was decreasing until 2004. Since then it has grown by 77 students, an increase of 6.5%. Fifth, looking at the shaded areas, one can see a lagged tiering of the drop in students by level once consecutive yearly decreases occur. Two questions arise. Given the turnaround at the elementary level, is this a signal for what to expect in the future? And, what is the cause of the turnaround since births have continued to fall?

We now turn to housing development. The number of yearly new housing permits by municipality and overall from 1993 to 2009 is shown in Table 13. The numbers range from a low of 18 in 1995 to a high of 62 in 2008. The lower panel of the table provides the data by period, where we have distinguished periods by the volume of construction, rather than using fixed four or five year periods. We also do not have construction data for Pleasant Hills prior to 2004. In 1993-94 the average number of new homes being built per year was 42, but then there was a sharp drop in construction in the next three years, 1995-97, with an average of only 26 new homes being built per year. By 1998-2001, we observe another turnaround just surpassing the level first seen in 1993-94 with an average of 43 new homes under construction per year. But the highest level of construction is most recent—that from 2002-2008 where 50 new homes were being built per year. For over a decade, the level of new housing construction has averaged 47 new homes per year. And, in spite of the "housing mortgage mess" that has crippled the economy more generally, there is, as yet, no observable downturn in construction of new homes in the school district, or is there? We will take a closer look by examining the set of developments that have been underway in Jefferson Hills Borough since 1997.

The number of new housing permits issued by year and by development in Jefferson Hills borough from 1997 to 2009 is provided in Table 14. In total, over the thirteen-year period, there were 586 new homes built, an average of 45 homes per year, (including 2009, for which only January through July data was collected). Overall, there is still no turndown. What does seem apparent is that the Woods of Jefferson and Jefferson Estates/Woodlands, both large developments, have come close to a standstill and that several new developments, Hunters Field, Castor Farms, South Ridge and Stone Villa Estates, are starting up very gingerly. Only Patriot Pointe is building at about the same pace. Thus, while it would appear that there is no let up in construction, there are, at least, some signals that the pace might weaken, in the near term. Thus, we now examine the current and future housing developments in this borough.

Table 15 shows the current and future housing developments in Jefferson Hills Borough in terms of the total units, the number built and the number remaining to be built. Of these 13 development plans, seven are clearly well underway—Chamberlin Ridge, Hickory Grove, Jefferson Estates/Woods, Patriot Pointe, Scenery Hill, South Ridge and the Woods of Jefferson. In these plans, there are 587 new homes, with 332 of them built (57%) and 255 (43%) remaining to be built. Of the six other plans, three have started building new houses, two are putting in utilities and one has final approval, but no permits have been issued. In these six plans, there are 506 new homes, three of which have been built and 503 (99%) remaining to be built. Thus, overall, there are 1,093 new housing units in these 13 plans, of which 335 homes have been built and 758 remain to be built. This is a very large number of homes awaiting construction. Moreover, it is important to point out that most are single family homes, others are double houses or duplexes and none are townhomes, condos or apartments, where the number of expected students per housing unit is much lower.

An indication of the importance of such new housing for our purposes is shown in Table 16, indicating the student/housing ratio per new home by development plan and overall. In Scenery Hill and the Woods of Jefferson the student/housing ratios are over 1.00. Overall, in the 419 new houses examined there were 297 West Jefferson Hills School District students, a ratio of .709. We will use these student/housing ratios, as well the more detailed educational level distributions for these new students, in the projections that directly take into account new housing construction. It is not as simple as just taking the number of new homes and multiplying this number by .709. Rather, we must take into account how much of the new housing is embedded in the retention ratios, as well as the potential or expected level of new housing construction beyond the current baseline in housing construction, which as discussed above, has been about 50 new homes per year (See Table 13—2002-2008 average). To better grasp what is at issue, we first turn to retention ratios—a basic building block of the projection model.

In this analysis we will use retention ratios as a baseline for projecting the changes in student population. The annual "retention ratios" and the changes from the prior projections' retention ratios are shown in Table 17. These parameter estimates are averaged over four years to increase reliability of the estimates. "Retention ratios" have an element of growth embedded in them since they may be above one (1). Thus, for instance in Table 17, all but three of the retention ratios are greater than 1.0. At Kindergarten to Grade 1 the ratio is 1.055, and at Grade 5 to Grade 6 and Grade 8 to Grade 9, the ratios are 1.040 and 1.045, respectively, partially reflecting the movement of private/parochial students into the school. Retention ratios over 1.0 also capture part of the growth stemming from housing construction, as well as net in-migration into the district, but they do so indirectly. That is, these ratios are not true "retention/survival rates" of the students in the origin grade or they would necessarily be less than or equal to 1.0. Rather these ratios capture retention of current students, replacements for any students who leave (if ≥1.0) and in-migration of students whose families move into the district, whether into new or existing housing. Thus, while they do not directly relate the specific underlying processes affecting the students, they reflect such processes indirectly. Hence, we refer to those retention ratios as entailing "embedded growth." Presently, we will denote such growth as a result of net in-migration and separately consider the remaining direct effects of housing construction. More details on the method for taking into account housing without double counting the effects embedded in the retention ratios will be provided when we build in the housing component of the projections in the next section.

In summary, overall we observe two countervailing effects—a continuation of the decrease in births, but now with a counterbalance in terms of increased net in-migration of families with pre-school children. Additionally, the cumulative impacts of the sequential decreases in births have been muted, but not fully counterbalanced at the middle school by net in-migration; recently however at the elementary level it has been more then counterbalanced since elementary enrollment is now increasing. Such net in-migration is likely driven by new housing development. Currently, the level of new housing construction remains stable, but some major housing plans are at or near a standstill and those new developments just starting are doing so very slowly. However, we note that there is a large backlog of 758 known new houses awaiting construction, primarily in currently on-going developments that are going slowly or somewhat "paused", and when this "pause" ends, we expect new housing development to surpass the most recent baseline of 50 new homes per year. The student population projections to follow will incorporate these components, as well as the expected recovery in the housing market. Moreover, for the projections of the individual elementary schools, the factors must also be broken down geographically and mapped to the appropriate attendance areas. We will discuss these aspects as the details of the projections are presented.

II. Development and Analysis of Grade-Specific School District Projections for the Ten-Year Period 2010-2019.

Scenario I: Projections with Fertility, Aging and Embedded Growth (Current Fertility Level)

The Scenario I projections use the following:

1. 2009 observed student populations per grade;
2. 2004-2007 four year retention ratios (Table 17) based on beginning of year school enrollment for 2004-2008;
3. Expected kindergarten enrollment mapped to t-5 births and using a four-year birth to kindergarten enrollment ratio of 1.101 (Table 17);

4. For years 2010-2013, the observed births in the West Jefferson Hills SD were used (Table 1);
5. For 2014-2019, the expected number of births is based on the 2005-2008 annual average (159).

That is, this scenario takes into account the following: (1) the most recent birth data, including births from the time periods having both 176 and 159 average births per year; (2) the most current retention ratios, which have embedded growth or net in-migration, since all retention ratios from Kindergarten through Grade 9 are above 1.0; and (3) the most recent birth to Kindergarten enrollment ratio, having a net in-migration at K that is 10% above the number of births five years earlier. Thus, this scenario clearly has some aspects of the effects from housing embedded in it. Table 18 presents the results for this scenario. In the first five years, the elementary level declines by 86 students, while the middle school enrollment increases by virtually the same amount, +87. The tie breaker is at the high school where there is a decrease of 30 students. Hence, after 5 years, the total student enrollment has a decrease of 29 students (-1%). In the second five years, both the elementary and middle school levels have decreases: -26 and -86, respectively. At the high school there is now an increase of 65 students and thus in the second five years there is a decrease of 47 students. Overall, by 2019, this scenario shows a decrease of 112 students (-9%) at the elementary level, virtually no change (+1) at the middle school level and an increase of 35 (+4%) at the senior high, for a total decrease of 76 students (-3%). In this scenario the main change is at the elementary level. In contrast to the earlier analysis where the increased net in-migration of pre-school children basically counterbalanced the prior drop in births, here there is an additional drop in births (from an average of 176 to 159 per year), but no corresponding increase in net in-migration of pre-school children.

Scenario II: Projections with Fertility, Aging and Embedded Growth (Lower Fertility)

This scenario uses the same parameters as Scenario I, except that for 2014-2019, the expected number of births is now based on the an additional drop in births, comparable to the most recent drop, seventeen fewer births per year from 2009-2014. That is, from 2000-2004 the average number of births per year was 176 and from 2005-2008 the yearly average dropped to 159, which is a decrease of 17 per year. Here, we assume another comparable decrease to 142 births per year (159-17=142). Table 19 shows the results. In this case, only the elementary level is affected since the change does not occur until 2014 and it's impact is initially at the Kindergarten level. After five years, cumulatively it has only reached Grade 5. Thus, in this scenario, in the first five years there is a decrease of 99 students at the elementary level, followed by another decrease of 129 students in the second five years. Overall, by 2019 there are decreases of 228 students at the elementary level, with no difference from Scenario I at the middle and high school levels--+1 at the middle school and +35 at the high school. The change in students in this case is a drop in total enrollment of 192 students (-7%). This is not the most likely scenario, but it is included to set a lower bound on projected enrollment.

Scenario III: Projections with Fertility, Aging and Embedded Growth (Higher Fertility).

This scenario takes the same parameters as in Scenarios I and II, except that now for 2014-2019, we assume that there is a rebound in births back to the prior level of 176 births per year. Thus, in this case, we are adding an additional 17 births per year to the most recent yearly average of 159. Table 20 shows the results. As in Scenario II, the only changes are at the elementary level. In this case, in the first five years there is a decrease of 72 students, but in the second five years there is a turnaround with an increase of 79 students. Thus, in this case, which is basically a return to Kindergarten inflows like those observed in the last few years, by 2019 there is very little change at either the elementary or middle school levels, +7 and +1, respectively. At the high school there is still a small increase of 35 students. Overall, in this case total enrollment increases by 43 students (+1%). As with Scenario II, neither is this scenario more likely than Scenario I. Rather, it sets a higher bound on fertility.

While we view Scenario I as more likely than Scenarios II and III, it has not taken into account the full impact of housing development. To do so requires adding any effects within the baseline level of housing construction that are not embedded in the retention ratios and then also adding the direct effects of new housing for construction beyond the baseline. We will consider new housing in the following scenario.

Scenario IV: Projections including the Direct Impacts of Housing

In this scenario, we deal directly with the growth in student enrollment due to new single family housing or new double houses/duplexes. More specifically, we utilize the data for major housing developments and for actual students enrolled per grade in these new projects. (See Table 16.) For a set of major developments involving 419 housing units, a ratio of .709 students per new home was found.

Additionally, the percentage of these students' enrollment per level (elementary, middle and senior high) was estimated from the data and is .651, .186 and .163 for the elementary, middle and high school level, respectively. Since part of the expected housing growth is already "embedded" in the "retention ratios," the first question that we must address is what portion is not covered. To estimate this proportion we ran a counterfactual as follows: (1) First, we observe the actual change in student population between 2004 and 2008 (2851-2863=-12); (2) We then utilize the retention ratios and birth to Kindergarten ratios starting with the student population in 2004 and estimate the trajectory after four years; the result is the expected enrollment in 2008, including housing impacts embedded in these ratios (2876-2863=+15); and (3) Since the estimates with retention and birth to Kindergarten ratios are greater than the actual enrollment, there is no other impact from the baseline level of housing construction—estimated at 50 new homes per year. Thus, any direct impacts from housing will result from construction above the baseline.

As discussed in Section I (See Table15), there is a large backlog of new housing development that is expected in the next few years. In current and new housing developments, either just starting or approved and about to start, there are 758 new homes to be built in 13 housing developments. Moreover, yet additional housing plans beyond these currently on-going or approved developments will also likely surface over the next decade. Also, some of the currently known developments will, no doubt, extend beyond ten years. Our task, then, is to attempt to set a build out process that is reasonable, given the historical rate of construction in the recent past and taking into account the backlog awaiting construction. As discussed in Section I, the average number of homes built per year from 2002 to 2008, was 50, with a range from 53 to 62 per year (See Table 13). Here, we will assume the following rate of construction: (1) 2010-2012, 60 homes per year, (2) 2013-2014, 70 homes per year and (3) 2015-2019, 80 homes per year. Given the baseline level of construction (50 homes per year) that is embedded in the retention and birth to Kindergarten ratios, we have increments in new homes per year of 10, 20 and 30 for 2010-2012, 2013-2014 and 2015-2019, respectively. With a student/housing ratio of .709 per new home, we expect the following additional students from these housing increments—7, 14 and 21 per year for 2010-2012, 2013-2014 and 2015-2019, respectively. The distribution by educational level for the additional students was noted above and the specifics by level and grade are given in Table 21.

The results for Scenario IV, taking into account the full impact of new housing are given in Table 22. In the first five years, the elementary and high school levels have decreases of 60 and 23 students, respectively. In contrast, the middle school is expected to increase by 101 students. Overall, after five years, there is a small increase of 18 students. In the second five years, there is no change at the elementary level, while the middle school is now expected to decrease by 58 students. Moreover, it is now the high school that is expected to increase—by 105 students—and overall there is a gain of 47 additional students. By 2019, after ten years, there is a decrease at the elementary level of 60 students (-5%); in contrast, at the middle and high school there are increases of 43 (+7%) and 82 (+9%) students, respectively. Overall, the expected change is an additional 65 students or +2%. The fundamental story is that housing and its net in-migration has countered the consecutive sequential decreases in births. First, this is observed in the birth to Kindergarten ratio—a ratio of 1.101, meaning that for every 100 births, we expect 110 children to enter Kindergarten five years later. Second, the retention ratios are all greater than 1.0 for grades K through Grade 9 and hence these ratios have much of the housing embedded in them—in fact, they and the birth to Kindergarten ratio contain all of the housing impact for the baseline level of housing construction of 50 new homes per year. What is new in Scenario IV is that housing construction is expected to go above 50 new homes being built per year. In fact, we have held the level of construction at 80 new homes per year for the last five years of the projections, 2015-2019—a rate of construction higher than has occurred for any year for which we could obtain housing data (1993-2009). The rate of construction was slowly increased in the first five years of the projections from 60 to 70 and only after five years did it reach 80. Thus, instead of decreasing by 76 students, as in Scenario I, the additional housing reverses this trajectory and there is an increase of 65 students. This is a difference of 141 students due to the increment in housing growth. Moreover, there was a substantial impact from housing embedded in the projections containing the baseline level of construction (Scenario I) to which we have added the incremental impacts beyond the baseline here in Scenario IV. This scenario is viewed as the most likely of all cases considered.

III. Development and Analysis of Areal Specific District Student Projections for the Three Elementary Schools: 2010-2019.

Projections for the Three Elementary Schools

Scenario V covers three elementary schools and all projections use the same four-year retention ratios (2004-2007) as in Scenario IV. (See Table 17.) Likewise, a birth at t-5 to K enrollment ratio of 1.101 is assumed for all schools here, as well as in the most likely aggregate case of Scenario IV. What differs here is that the births must be disaggregated and melded to the specific elementary school attended. Thus, we have used the 2009 attendance boundaries and examined the number of Kindergarten students by school within each municipality. One municipality has 100% attendance at one school. All West Elizabeth Borough students attend Jefferson Elementary. For the remaining two municipalities, however, we examined the percentage distribution attending each school. Overall, we found the following distributions (Columns add to 1.0):

	Municipality		
Elementary School	Pleasant Hills Borough	West Elizabeth Borough	West Jefferson Borough
Gill Hall	.011		.451
Jefferson	.433	1.000	.538
McClellan	.556		.011

The key, presently, is that the above distributions have been usd to allocate the proportion of births in each municipality that will reach Kindergarten age in five years. Then for the total number of births per school, we utilize the birth to Kindergarten ratio of 1.101 to estimate the initial Kindergarten enrollment five years later. For the additional housing component, we use the housing developments within the attendance area to obtain the distribution of new elementary students and then allocate them by grade. Of course, for all elementary schools, the transportation/attendance boundaries may change, shifting these distributions, depending on the number of students available and the building capacities. Thus, it is taken as given that such flexibility exists and that these projections may, in fact, serve as a planning device to change the above underlying distributions. For the present purpose, acknowledging such possibilities, in the projections to follow we will assume that the attendance boundaries are fixed. Births by municipality for 2005-2008 are taken as observed, as shown in Table 1. The above distributions are then aggregated per school to arrive at an expected birth to K enrollment process. Once births are estimated in this way, we will assume a birth to K enrollment ratio of 1.101, as used in Scenario IV.

As for the new housing component, we will use the number of homes specified in the discussion in Section II as the number expected per year over the next decade—that is 60 per year in 2010-2012, 70 per year in 2013-2014 and 80 per year for the last five years, 2015-2019. Here, as with births, we must examine the housing per municipality and then distribute it across schools. We have left out Scenery Hill, Phase 3, since there is only one house remaining to be built. The following is the list of the other 12 main housing developments in Table 15 by the elementary school where the students would enroll:

Gill Hall	Jefferson	McClellan
Jefferson Estates/Woodlands	Hickory Grove	Hunters Field
Mill School	DiMarco Plan	
Patriot Pointe	Chamberlin Ridge	
Woods of Jefferson	Andrews Acres	
	Castor Farms	
	South Ridge	
	Stone Villa Estates	

The total number of homes remaining to be built in these three sets of housing developments is 228 for Gill Hall, 196 for Jefferson and 333 for McCllellan. Certainly, no one knows exactly the build-out schedule of each of these plans, as the current economic environment accentuates this point. However, we do have data in Table 14 for housing plans that are well underway as to their rate of construction per year. For the other plans that are just beginning or about to begin, we have set a schedule with either a constant rate of construction per year or a lower number of homes in the first five years and a higher number in the second five years (Mill School, from 5 to 10 per year and Stone Villa Estates, from 2 to 3 per year). In the case of Hunters Field, the largest housing plan in the district, and one that, to date, has only one house built, we have it starting out quite slowly, then ramping up to around 40, then 45 and finally to 55 per year in the last three years. In year ten of the projection, 2019, there are 38 homes that are not in any of the plans and have been allocated to McCllellan. Additionally, the following plans were estimated to have some homes remaining to be built after 2019—Mill School (7 of 82), DiMarco (3 of 13) and Chamberlin Ridge (46 of 96). In total, we have 720 homes being built over the next ten years—a very tall order, indeed. Moreover, recall that the bulk of the construction impact is embedded in the retention and birth to Kindergarten ratios. Thus, while the estimated build-out schedule is, in fact estimated, only the increments above 50 houses per year will have direct impacts in the projections to follow. The following is the expected build-out schedule that we have used:

Elementary School	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Gill Hall	42	42	35	16	15	20	20	10	10	10
Jefferson	14	15	15	15	15	15	15	15	15	15
McClellan	4	3	10	39	40	45	45	55	55	55
Total	60	60	60	70	70	80	80	80	80	80

This yields the following new housing construction increments, beyond the fifty (50) baseline, which have direct impacts:

Elementary School	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10
Gill Hall	8	8	6	5	4	8	8	3	3	3
Jefferson	2	2	3	4	4	6	6	6	6	6
McClellan	0	0	1	11	12	16	16	21	21	21
Total	10	10	10	20	20	30	30	30	30	30

For the above new homes involving the additional or incremental construction beyond the baseline, we now have three additional steps—(1) to utilize the student/housing ratio [.709], (2) to take only the elementary proportion of the new students [.651] and (3) to allocate the new students by grade. All three of these steps pertain to each elementary school. Table 23 provides the distribution of new students by grade and elementary school from the direct impacts on new housing beyond the baseline.

The results of the projections are given in Tables 24A,B and C. For Gill Hall Elementary, shown in Table 24A, there is an expected decrease of 62 students in the first five years, followed in the second five years by a small drop of only five students. By 2019, the enrollment is expected to be 261 students, a decrease of 67 students (-20%). The projections for Jefferson Elementary are given in Table 24B. In the Jefferson Elementary, there is an initial decrease of 7 students in the first five years, followed by a larger decrease of 19 students in the second five years. After ten years, the student enrollment is expected to decrease by 26 students or 4%, a much smaller drop than in Gill Hall. Finally, the McClellan Elementary projections are shown in Table 24C. In the first five years there is an expected increase of 10 students, followed in the second five years of another increase of 18 students. Thus, by 2019, McClellan enrollment is expected to increase by 28 students or 9%. In the second five years, the new housing development, Hunters Field, is driving the growth in student enrollment. Should this housing plan take more than a decade, then the projections here will overestimate the enrollment in McClellan. In fact, the same can be said for all of the housing plans, potentially yielding over estimates even for Gill Hall and Jefferson.

A summary of the expected changes in Scenario V is given below:

	2009 Population	Change by 2014	Change by 2019	2019 Pop.	% Change
Gill Hall	328	-62	-5	261 (-67)	(-20%)
Jefferson	613	-7	-19	587 (-26)	(-4%)
McClellan	322	+10	+18	350 (+28)	(+9%)
Total	1263	-59	-6	1198 (-65)	(-5%)

The student projections in Scenario V map very closely to those at the elementary level in Scenario IV. For instance in 2014, there is a difference of 1 and in 2019 the difference is five. These small differences are due to multiple multiplication round offs and are less than one per cent. In short, the two levels of projections in terms of the aggregate and disaggregate results are extremely consistent. The Scenario IV results are as follows:

Educational Level	2009 Pop.	Change by 2014	Change by 2019	2019 Pop.	% Change
K→G5	1263	-60	0	1203 (-60)	(-5%)
G6→G8	652	+101	-58	695 (+43)	(+7%)
G9→G12	958	-23	+105	1040 (+82)	(+9%)
$\sum$	2873	+18	+47	2938 (+65)	(+2%)

As noted previously, the results of Scenario IV are the most likely, taking into account the current fertility, net in-migration and new housing construction.

Table 1

Annual Number of Births to West Jefferson Hills School District Residents by Municipality and Year: 1990-2007*

	West Jefferson Borough	Pleasant Hills Borough	West Elizabeth Borough	Total
1990	139	115	17	271
1991	118	95	21	234
1992	124	106	14	244
1993	119	92	12	223
1994	120	93	10	223
1995	113	84	14	211
1996	94	87	4	185
1997	89	100	11	200
1998	85	70	10	165
1999	104	72	6	182
2000	83	87	9	179 (166)
2001	87	78	7	172 (171)
2002	94	82	8	184 (177)
2003	84	70	5	159 (151)
2004	96	87	4	187 (179)
2005	72	87	4	163 (159)
2006	69	78	3	150 (165)
2007	84 (82)	67 (67)	7 (7)	158 (156)
2008	(76)	(80)	(9)	(165)
$\sum$ 1990-1994	620	501	74	1195
$\sum$ 1995-1999	485	413	45	943
$\sum$ 2000-2004	444	404	33	881
$\sum$ 2005-2008	299	312	23	636
Average/Year				
1990-1994	124.0	100.2	14.8	239.0
1995-1999	97.0	82.6	9.0	188.6
2000-2004	88.8	80.8	6.6	176.2
2005-2008	74.8	78.0	5.8	159.0
Δ_1^{∂}	-27.0	-17.6	-5.8	-50.4
Δ_2^{δ}	-8.2	-1.8	-2.4	-12.4
Δ_3^{λ}	-35.2	-19.4	-8.2	-62.8
Δ_4^{∞}	-14.0	-2.8	-0.8	-17.2

* Source: Allegheny County Health Department; except for the total for 2008, where only preliminary state numbers are presently available; we have also provided the numbers from the Pennsylvania Department of Health for the prior eight years from 2000-2007 (in parentheses).

$^{\partial}$ Δ_1 (1990-1994) → (1995-1999)

$^{\delta}$ Δ_2 (1995-1999) → (2000-2004)

$^{\lambda}$ Δ_3 (1990-1994 average) → (2000-2004 average)

$^{\infty}$ Δ_4 (2000-2004 average) → (2005-2008 average)

Table 2

Births by Age of Mother and Year: West Jefferson Hills School District[δ]

		15-19	20-24	25-29	30-34	35-39	40-44	45+	Σ
1990-1994	1990	9	32	92	101	34	3	0	271
	1991	10	32	65	90	36	1	0	234
	1992	2	30	81	99	30	2	0	244
	1993	9	23	80	70	37	4	0	223
	1994	10	22	76	79	30	5	1	223
	Σ_1	40	139	394	439	167	15	1	1195
	% of Σ	.034	.116	.330	.367	.140	.013	.001	--
	Avg/Yr	8.0	27.8	78.8	87.8	33.4	3.0	0.2	239.0
1995-1999	1995	14	25	60	81	27	3	1	211
	1996	7	20	56	68	31	3	0	185
	1997	6	15	64	73	31	11	0	200
	1998	9	11	43	76	21	5		165
	1999	1	17	49	80	32	3	0	182
	Σ_2	37	88	272	378	142	25	1	943
	% of Σ	.039	.093	.288	.401	.151	.027	.001	
	Avg/Yr	7.4	17.6	54.4	75.8	28.4	5.0	0.2	188.6
2000-2004	2000	5	17	45	76	32	3	1	179
	2001	4	22	43	64	31	8	0	172
	2002	4	25	55	54	40	6	0	184
	2003	6	21	39	58	29	6	0	159
	2004	4	12	52	67	44	8	0	187
	Σ_3	23	97	234	319	176	31	1	881
	% of Σ	.026	.110	.266	.362	.200	.035	.001	
	Avg/Yr	4.6	19.4	46.8	63.8	35.2	6.2	0.2	176.2
2005-2007	2005	4	20	41	66	28	4	0	163
	2006	4	19	42	56	23	2	1	150
	2007	3	21	48	64	18	2	0	156
	Σ 2005-07	11	60	131	186	69	11	1	469
	% of Σ	.024	.128	.279	.397	.147	.024	.002	
	Avg/Yr	3.7	20.0	43.7	62.0	23.0	3.7	0.3	156.3
	Δ_1^{*}	-0.6	-10.2	-24.4	-12.0	-5.0	+2.0	0	-50.4
	Δ_2^{+}	-2.8	+1.8	-7.6	-12.0	+6.8	+1.2	0	-12.4
	Δ_3^{γ}	-0.9	+0.6	-3.1	-1.8	-12.2	-2.5	+0.1	-19.9
	Δ_4^{τ}	-3.4	-8.4	-32.0	-24.0	+1.8	+3.2	0	-62.8
	Δ_5^{ς}	-.010	+.012	-.051	-.030	+.007	+.011	+.001	.--
	Δ_6^{ξ}	-.425	-.302	-.406	-.273	+.054	+1.067	NA	-.263

[δ] Source: Allegheny County Health

[*] Δ_1(1990-1994)$\rightarrow$(1995-1999)

[•] Δ_1(1990-1994)$\rightarrow$(1995-1999)

[+] Δ_2(1995-1999)$\rightarrow$(2000-2004)

[γ] Δ_3(2000-2004 average)$\rightarrow$(2005-2007 average)

[τ] Δ_4(1990-1994 average)$\rightarrow$(2000-2004 average)

[ς] Δ_5(% of Σ 2005-2007)$\rightarrow$(% of Σ 1990-1994)

[ξ] Δ_6(Δ_4/1990-1994 average) i.e., % change

Table 2A

Births by Age of Mother and Year: Jefferson Hills[δ]

		15-19	20-24	25-29	30-34	35-39	40-44	45+	$\sum$
1990-1994	1990	3	20	44	50	20	2	0	139
	1991	3	16	35	46	18	0	0	118
	1992	0	23	43	45	13	0	0	124
	1993	4	14	45	29	23	4	0	119
	1994	5	14	38	40	19	3	1	120
	$\sum_1$	15	87	205	210	93	9	1	620
	% of $\sum$	.024	.140	.331	.339	.159	.015	.002	
	Avg/Yr	3.0	17.4	41.0	42.0	18.6	1.8	0.2	124.0
1995-1999	1995	8	13	33	41	17	1	0	113
	1996	6	12	30	31	15	0	0	94
	1997	4	12	24	33	14	2	0	89
	1998	4	10	24	32	12	3	0	85
	1999	1	9	28	36	27	3	0	104
	$\sum_2$	23	56	139	173	85	9	0	485
	% of $\sum$	.047	.116	.287	.357	.175	.019	0	
	Avg/Yr	4.6	11.2	27.8	34.6	17.0	1.8	0	97.0
2000-2004	2000	2	7	20	40	13	1	0	83
	2001	3	13	20	26	21	4	0	87
	2002	1	18	25	25	21	4	0	94
	2003	2	10	24	29	16	3	0	84
	2004	4	9	24	30	26	3	0	96
	$\sum_3$	12	57	113	150	97	15	0	444
	% of $\sum$	.027	.128	.255	338	.219	.034	0	
	Avg/Yr	2.4	11.4	22.6	30.0	19.4	3.0	0	88.8
2005-2007	2005	3	8	17	27	14	3	0	72
	2006	1	13	20	25	10	0	0	69
	2007	1	12	24	30	13	2	0	82
	$\sum$ 2005-07	5	33	61	82	37	5	0	223
	% of $\sum$	.022	.148	.274	.368	.166	.022	0	
	Avg/Yr	1.7	11.0	20.3	27.3	12.3	1.7	0	74.3
	Δ_1^*	+1.6	-6.2	-13.2	-7.4	-1.6	0	-0.2	-27.0
	Δ_2^+	-2.2	+0.2	-5.2	-4.6	+2.4	0	0	-8.2
	Δ_3^{Υ}	-0.7	-0.4	-2.3	-2.7	-7.1	-1.3	0	-14.5
	Δ_4^{τ}	-0.6	-6.0	-18.4	-12.0	+0.8	+1.2	0	-35.2
	Δ_5^{ς}	-.002	+.008	-.057	+.029	+.007	+.007	-.002	--
	Δ_6^{ξ}	-.200	-.345	-.449	-.286	+.043	+.667	0	-.284

[δ] Source: Allegheny County Health

[*] Δ_1(1990-1994)$\rightarrow$(1995-1999)

[+] Δ_2(1995-1999)$\rightarrow$(2000-2004)

[ϒ] Δ_3(2000-2004 average)$\rightarrow$(2005-2007 average)

[τ] Δ_4(1990-1994 average)$\rightarrow$(2000-2004 average)

[ς] Δ_5(% of $\sum$ 2000-2004)$\rightarrow$(% of $\sum$ 1990-1994)

[ξ] Δ_6(Δ_4/1990-1994 average) i.e., % change

Table 2B

Births by Age of Mother and Year: Pleasant Hills[δ]

		15-19	20-24	25-29	30-34	35-39	40-44	45+	Σ
1990-1994	1990	2	7	42	50	14	0	0	115
	1991	3	12	22	39	18	1	0	95
	1992	1	4	32	53	14	2	0	106
	1993	2	4	31	41	14	0	0	92
	1994	3	6	37	36	9	2	0	93
	Σ_1	11	33	164	219	69	5	0	501
	% of Σ	.022	.066	.327	.437	.138	.010	0	
	Avg/Yr	2.2	6.6	32.8	43.8	13.8	1.0	0	100.2
1995-1999	1995	4	8	24	38	9	1	0	84
	1996	0	8	25	35	16	3	0	87
	1997	2	2	33	38	16	9	0	100
	1998	4	0	17	39	8	2	0	70
	1999	0	4	20	43	5	0	0	72
	Σ_2	10	22	119	193	45	1	0	413
	% of Σ	.024	.053	.288	.467	.109	.036	0	
	Avg/Yr	2.0	4.4	23.8	38.6	9.0	3.0	0	82.6
2000-2004	2000	2	7	22	36	1	2	1	87
	2001	1	8	19	37	9	4	0	78
	2002	3	6	27	28	17	1	0	82
	2003	3	9	14	29	12	3	0	70
	2004	0	3	25	36	18	5	0	87
	Σ_3	9	33	107	166	73	15	1	404
	% of Σ	.022	.082	.265	.411	.181	.037	.003	
	Avg/Yr	1.8	6.6	21.4	33.2	14.6	3.0	0.2	80.8
2005-2007	2005	1	9	23	39	14	1	0	87
	2006	2	6	21	31	12	5	1	78
	2007	2	4	24	32	5	0	0	67
	Σ 2005-07	5	19	68	102	31	6	1	232
	% of Σ	.022	.082	.293	.440	.134	.026	.004	
	Avg/Yr	1.7	6.3	22.7	34.0	10.3	2.0	0.3	77.3
	Δ_1^{*}	-0.2	-2.2	-9.0	-5.2	-4.8	+2.0	0	-17.6
	Δ_2^{+}	-0.2	+2.2	-2.4	-5.4	+5.6	0	+0.2	-1.8
	Δ_3^{Υ}	-0.1	-0.3	+1.3	+0.8	-4.3	-1.0	+0.1	-3.5
	Δ_4^{τ}	-0.4	0	-11.4	-10.6	+0.8	-2.0	+0.2	-19.4
	Δ_5^{ς}	0	+.016	-.034	+.003	-.004	+.016	+.004	--
	Δ_6^{ξ}	-.182	0	-.348	-.242	-.312	+2.0	NA	-.194

[δ] Source: Allegheny County Health

[*] Δ_1(1990-1994 average)$\rightarrow$(1995-1999 average)

[+] Δ_2(1995-1999 average)$\rightarrow$(2000-2004 average)

[ϒ] Δ_3(2000-2004 average)$\rightarrow$(2005-2007 average)

[τ] Δ_4(1990-1994 average)$\rightarrow$(2000-2004 average)

[ς] Δ_5(% of Σ 2005-2007)$\rightarrow$(% of Σ 1990-1994)

[ξ] Δ_6(Δ_4/1990-1994 average) i.e., % change

Table 2C

Births by Age of Mother and Year: West Elizabeth[δ]

		15-19	20-24	25-29	30-34	35-39	40-44	45+	$\sum$
1990-1994	1990	4	5	6	1	0	1	0	17
	1991	4	4	8	5	0	0	0	21
	1992	1	3	6	1	3	0	0	14
	1993	3	5	4	0	0	0	0	12
	1994	2	2	1	3	2	0	0	10
	$\sum_1$	14	19	25	10	5	1	0	74
	% of $\sum$	.189	.257	.338	.135	.068	.014	0	
	Avg/Yr	2.8	3.8	5.0	2.0	1.0	0.2	0	14.8
1995-1999	1995	2	4	3	3	1	1	0	14
	1996	1	0	1	2	0	0	0	4
	1997	0	1	7	2	1	0	0	11
	1998	1	1	2	5	1	0	0	10
	1999	0	4	1	1	0	0	0	6
	$\sum_2$	4	10	14	13	3	1	0	45
	% of $\sum$	.089	.222	.311	.289	.067	.022	0	
	Avg/Yr	0.8	2.0	2.8	2.6	0.6	0.2	0	9.0
2000-2004	2000	1	3	3	0	2	0	0	9
	2001	0	1	4	1	1	0	0	7
	2002	0	1	3	1	2	1	0	8
	2003	1	2	1	0	1	0	0	5
	2004	0	0	3	1	0	0	0	4
	$\sum_3$	2	7	14	3	6	1	0	33
	% of $\sum$	.061	.212	.424	.091	.182	.030	0	
	Avg/Yr	0.4	1.4	2.8	0.6	1.2	0.2	0	6.6
2005-2007	2005	0	3	1	0	0	0	0	4
	2006	1	0	1	0	1	0	0	3
	2007	0	5	0	2	0	0	0	7
	$\sum$ 2005-07	1	8	2	2	1	0	0	14
	% of $\sum$	.071	.571	.143	.143	.071	0	0	
	Avg/Yr	0.3	2.7	0.7	0.7	0.3	0	0	4.7
	Δ_1^*	+2.0	-1.8	-2.2	+0.6	-0.4	0	0	-5.8
	Δ_2^+	-0.4	-0.6	0	-2.0	+0.6	0	0	-2.4
	Δ_3^γ	-0.1	+1.3	-2.1	+0.1	-0.9	-0.2	0	-1.9
	Δ_4^τ	-2.4	-2.4	-2.2	-1.4	+0.2	0	0	-8.2
	Δ_5^ς	-.118	+.314	-.195	-.008	+.003	-.014	0	--
	Δ_6^ξ	-.857	-.632	-.440	-.700	+.200	0	NA	-.554

[δ] Source: Allegheny County Health

[*] Δ_1(1990-1994 average)$\rightarrow$(1995-1999 average)

[+] Δ_2(1995-1999 average)$\rightarrow$(2000-2004 average)

[γ] Δ_3(2000-2004 average)$\rightarrow$(2005-2007 average)

[τ] Δ_4(1990-1994 average)$\rightarrow$(2000-2004 average)

[ς] Δ_5(% of $\sum$ 2005-2008)$\rightarrow$(% of $\sum$ 1990-1994)

[ξ] Δ_6(Δ_4/1990-1994 average) i.e., % change

Table 3

Distribution of Births by Age of Mother and Year
In the West Jefferson Hills School District[ς]

	AGE							
YEAR	15-19	20-24	25-29	30-34	35-39	40-44	45	Total Births
1990	.033	.118	.340	.373	.126	.011	0	271
1991	.043	.137	.278	.385	.154	.004	0	234
1992	.008	.123	.332	.406	.123	.008	0	244
1993	.040	.103	.359	.314	.166	.018	0	223
1994	.045	.099	.341	.354	.135	.022	.005	223
1995	.066	.119	.284	.384	.128	.014	.005	211
1996	.038	.108	.303	.368	.168	.016	0	185
1997	.030	.075	.320	.365	.155	.055	0	200
1998	.055	.067	.261	.461	.127	.030	0	165
1999	.006	.093	.269	.440	.176	.017	0	182
2000	.028	.095	.251	.425	.179	.017	.006	179
2001	.023	.128	.250	.372	.180	.047	0	172
2002	.022	.136	.299	.294	.217	.033	0	184
2003	.038	.132	.245	.365	.182	.038	0	159
2004	.021	.064	.278	.358	.235	.043	0	187
2005	.024	.123	.252	.405	.172	.025	0	163
2006	.027	.127	.280	.373	.153	.033	.007	150
2007	.019	.135	.308	.410	.115	.013	0	156

AVERAGE

1990-94	.034	.116	.330	.367	.140	.013	.001	1195
1995-99	.039	.093	.288	.401	.151	.027	.001	943
2000-04	.026	.110	.266	.362	.200	.035	.001	881
2005-07	.024	.128	.279	.397	.147	.024	.002	469
Δ%[ξ]	-.010	+.012	-.051	+.030	+.007	+.011	+.001	

[ς] Source: Allegheny County Health Department

[ξ] [2005-2007 average] – [1990-1994 average]

Table 4

Shift in Reproductive Age Female Population by Municipality And Overall School District: 1990-2000

Muncipality	Five Year Age Groups											
	1990						2000					
	15-19	20-24	25-29	30-34	35-39	40-44	15-19	20-24	25-29	30-34	35-39	40-44
Jefferson Hills Borough	244	316	389	478	395	362	310	168	231	340	359	513
Pleasant Hills Borough	23	242	291	360	382	328	223	143	169	221	318	373
West Elizabeth Borough	21	14	29	32	21	20	19	18	24	24	24	20
TOTAL	496	52	709	870	798	710	552	329	424	585	701	906

Change from 1990	15-19	20-24	25-29	30-34	35-39	40-44
Jefferson Hills	+66	-148	-158	-138	-36	+151
Pleasant Hills	-8	-99	-122	-139	-64	+45
West Elizabeth	-2	+4	-5	-8	+3	0
Total	+56	-243	-285	-285	-97	+196
Percent Change						
Jefferson Hills	27.0%	-46.8%	-40.6%	-28.9%	-9.1%	+41.7%
Pleasant Hills	-3.5%	-40.9%	-41.9%	-38.6%	-16.8%	+13.7%
West Elizabeth	-9.5%	+28.8%	-17.2%	-25.0%	+14.3%	0
Total	+11.3%	-42.5%	-40.2%	-32.8%	-12.2%	+27.6%

Table 5

SHIFTS IN AGE COHORTS OF FEMALES IN THE UNITED STATES IN PENNSYLVANIA AND IN ALLEGHENY COUNTY: 1990-2007

	United States			Pennsylvania			Allegheny County		
	1990[α]	2000	2005-07	1990	2000	2005-07	1990	2000	2005-07
0-4	8962	9365	10006	387926	355356	356661	41156	34721	31907
5-9	8837	10026	9640	383947	403701	361023	39193	38610	33700
10-14	8347	10008	10031	368709	420247	396339	36073	40548	36384
15-19	8651	9829	10443	402320	417294	443614	40160	39916	41755
20-24	9345	9276	10104	432692	373203	398697	47352	37861	39041
25-29	10617	9583	9960	503220	366399	355793	53801	38593	30611
30-34	10986	10189	9717	466320	417281	361571	59283	43097	34678
35-39	10061	11388	10498	418201	482595	423349	54269	49714	41624
40-44	8924	11313	11307	337594	504367	466216	47016	54439	46096

CHANGE BY AGE COHORT ACROSS TIME[β]

	United States		Pennsylvania		Allegheny County	
	x(1990)-x(2000)	x(2000)-x(2005-07)	x(1990)-x(2000)	x(2000)-x(2005-07)	x(1990)-x(2000)	x(2000)-x(2005-07)
0-4	+403k(+4.5%)	+641k(+6.8%)	-32570(-8.4%)	+1305(+0.4%)	-6435(-15.6%)	-2814(-8.1%)
5-9	+1189k(+13.5%)	-386k(-3.8%)	+19754(+5.1%)	-42678(-10.6%)	-583(-1.5%)	-4910(-12.7%)
10-14	+1661k(+19.9%)	+23k(-0.2%)	+51538(+14.0%)	-23908(-5.7%)	+4475(+12.4%)	-4164(-10.3%)
15-19	+1178k(+13.6%)	+614k(+6.2%)	+14974(+3.7%)	+26320(+6.3%)	-244(-0.6%)	-1839(-4.6%)
20-24	-69k(-0.7%)	+828k(+8.9%)	-59489(-13.7%)	+25494(+6.8%)	-9491(-20.0%)	+1180(+3.1%)
25-29	-1034k(-9.7%)	+377k(+3.9%)	-136821(-27.2%)	-10606(-2.9%)	-15208(-28.3%)	-7982(-20.7%)
30-34	-797k(-7.3%)	-472k(-4.6%)	-49039(-10.5%)	-55710(-13.4%)	-16186(-27.3%)	-8419(-19.5%)
35-39	+1327k(+13.2%)	+890k(+7.8%)	+64394(+15.4%)	-59246(-12.3%)	-4555(-8.4%)	-8090(-16.3%)
40-44	+2389k(+26.8%)	-6k(-0.1%)	+166773(+49.4%)	-38151(7.6%)	+7423(+15.8%)	-8343(-15.3%)

[α] In thousands e.g., 8,962 is 8962000 or 8.962 million

[β] Cross-Sectionally by Period; in other words, change (Δ) in age group x in 1990 vs. 2000 and 2005 for the same age group x.

CHANGE WITHIN AGE COHORT ACROSS TIME[δ]

	United States		Pennsylvania		Allegheny County	
	1990→2000	2000→2005-07	1990→2000	2000→2005-07	1990→2000	2000→2005-07
	X→X+10[δ]	X→X+5	X→X+10	X→X+5	X→X+10	X→X+5
0-4	+1046K(+11.7%)	+275K(+2.9%)	+32321(+8.3%)	+5667(+1.6%)	-608(-1.5%)	-1021(-2.9%)
5-9	+992K(+11.2%)	+5K(+0.1%)	+33347(+8.9%)	-7362(-1.8%)	+723(+1.8%)	-2226(-5.8%)
10-14	+929K(+11.1%)	+435K(+4.3%)	-4494(-1.2%)	-23367(-5.6%)	+1788(+5.0%)	+1207(+3.0%)
15-19	+932K(+10.8%)	+275K(+2.8%)	-35921(-8.9%)	-18597(-4.5%)	-1567(-3.9%)	-875(-2.2%)
20-24	+844K(+9.0%)	+684(+7.4%)	-15411(-3.6%)	-17410(-4.2%)	-4275(-9.0%)	-7250(19.1%)
25-29	+771K(+7.3%)	+134K(+1.4%)	-20625(-4.1%)	-4828(-1.3%)	-4087(-7.6%)	-3915(-10.1%)
30-34	+327K(+3.0%)	+309K(+3.0%)	-38047(-8.2%)	-6068(-1.5%)	-4844(-8.2%)	-1493(-3.4%)
35-39		-81K(-0.7%)*		-16379(-3.4%)		-3618(-7.3%)
40-44						

δ Longitudinally following an age cohort over time, including net migration; in other words change (Δ) in age cohort x in 1990 vs. age cohort x+10 in 2000 and for age cohort x in 2000 vs. age cohort x+5 in 2005-07. The age cohorts include net migration.

δ For example, A) the female age cohort 0-4 in 1990 (8,962) compared to B) the female age cohort 10-14 in 2000 (1,008) that is, B-A.

* likely estimation error—this number and % of Δ should be positive at the national level.

Table 6

Age-Specific Shifts in Births Relative to Age-Specific Shifts in Number of Reproductive Age Females (NRAF)

	A	B	C
	Shifts in Births (1990-94)-(2000-2004)	Shifts in NRAF (1990→2000)	Δ (A-B)
15-19	-42.5%	+11.3%	-53.8%
20-24	-30.2%	-42.5%	+12.3%
25-29	-40.6%	-40.2%	-0.4%
30-34	-27.3%	-32.8%	+5.5%
35-39	+5.4%	-12.2%	+17.6%
40-44	+106.7%	+27.6%	+79.1%

Table 7

Total Fertility Rate[δ] for the United States—
White and White (non-Hispanic): 1970-2007

	ALL	White (including Hispanic)	White (non-Hispanic)	Hispanic		ALL	White (including Hispanic)	White (non-Hispanic)	Hispanic
1970	2.5	2.4			1990	2.1	2.0	1.9	3.0
1971	2.3	2.2			1991	2.1	2.0	1.8	3.0
1972	2.0	1.9			1992	2.1	2.0	1.8	3.0
1973	1.9	1.8			1993	2.0	2.0	1.8	2.9
1974	1.8	1.7			1994	2.0	2.0	1.8	2.8
1975	1.7	1.7			1995	2.0	2.0	1.8	2.8
1976	1.7	1.7			1996	2.0	2.0	1.8	2.8
1977	1.8	1.7			1997	2.0	2.0	1.8	2.7
1978	1.7	1.7			1998	2.1	2.0	1.8	2.7
1979	1.8	1.7			1999	2.1	2.1	1.8	2.6
1980	1.8	1.8			2000	2.1	2.1	1.9	2.7
1981	1.8	1.7			2001	2.0	2.0	1.8	2.7
1982	1.8	1.8			2002	2.0	2.0	1.8	2.7
1983	1.8	1.7			2003	2.0	2.1	1.9	2.8
1984	1.8	1.7			2004	2.0	2.1	1.8	2.8
1985	1.8	1.8			2005	2.1	2.1	1.8	2.9
1986	1.8	1.8			2006	2.1	2.1	1.9	3.0
1987	1.9	1.9			2007	2.1		1.9	3.0
1988	1.9	1.9							
1989	2.0	1.9							

[δ] The Total Fertility Rate is the average expected total number of children that a woman will have under the current age-specific fertility rates.

Table 8

Overall Net Migration for the West Jefferson Hills School District Using Baseline "Replacement" of Grade 12 Students in Year t-1 by Kindergarten Students in Year t: 1990-2007

Migration Data

	K_t	$G12_{t-1}$	Δ_1 without migration[ς]	Total Student $Population_t$	Δ_2[ξ]	Net Migration[λ]
t= 1991-92	247	205	+42	2675	+50	+8
1992-93	231	155	+76	2783	+108	+32
1993-94	210	196	+14	2775	-8	-22
1994-95	217	162	+55	2831	+56	+1
1995-96	238	182	+56	2920	+89	+33
1996-97	213	195	+18	2995	+75	+57
1997-98	197	204	-7	2995	0	+7
1998-99	215	226	-11	3016	+21	+32
1999-00	171	215	-44	2977	-39	+8
2000-01	174	220	-46	2973	-4	+42
2001-02	206	238	-32	2970	-3	+29
2002-03	164	196	-32	2933	-37	-5
2003-04	199	235	-36	2894	-39	-3
2004-05	203	258	-55	2863	-31	+24
2005-06	174	236	-62	2836	-27	+35
2006-07	197	216	-19	2880	+44	+63
2007-08	203	231	-28	2840	-40	-12
2008-09	187	254	-67	2851	+11	+78
Last 10 yrs: $\sum$ 1998-2007			-421		-165	+256
Last 5 yrs: $\sum$ 2003-2007			-231		-43	+188
Last 8 years: $\sum$ 2000-2007			-331		-122	+209

ς $\Delta_1 = K_t - G12_{t-1}$, i.e., assuming the counterfactual case of "what if" no one migrated; rather there was only G12 students exiting via graduation and K students entering. Thus the "net migration" pertains to year t-1.

ξ Δ_2=Student $Population_t$ – Student $Population_{t-1}$; in 1990 the total student population was 2,625.

λ Net migratio is $(\Delta_2-\Delta_1)$ where Δ_2 is the change in actual or observed total students and Δ_1 is the counterfactual "what if" case depicting would happen to the total student population with no migration—in or out. Thus, the difference $(\Delta_2 - \Delta_1)$ is net migration.

Table 8A

"Net Migration at the Elementary Level: 1990-2007

	K_t	$G5_{t-1}$	Δ_1 without migration[ς]	Elem. School $Population_t$	Δ_2[ξ]	Net Migration[λ]
t= 1991-92	247	195	+52	1,294	+42	-10
1992-93	231	186	+45	1,369	+75	+30
1993-94	210	212	-2	1,369	0	+2
1994-95	217	229	-12	1,356	-13	-1
1995-96	238	217	+21	1,403	+47	+26
1996-97	213	232	-19	1,408	+5	+24
1997-98	197	271	-74	1,348	-60	+14
1998-99	215	253	-38	1,330	-18	+20
1999-00	171	216	-45	1,274	-56	-11
2000-01	174	235	-61	1,221	-53	+8
2001-02	206	239	-33	1,241	+20	+53
2002-03	164	231	-67	1,178	-63	+4
2003-04	199	212	-13	1,161	-17	-4
2004-05	203	211	-8	1,186	+25	+33
2005-06	174	199	-25	1,179	-7	+18
2006-07	197	199	-2	1,226	+47	+49
2007-08	203	220	-17	1,222	-4	+13
2008-09	187	186	+1	1,236	+14	+13
Last 10 years: $\sum$ 1998-2007			-270		-94	+176
Last 5 years: $\sum$ 2003-2007			-51		+75	+126
Last 8 years: $\sum$ 2000-2007			-164		+15	+179

[ς] $\Delta_1=(K_t-G5_{t1})$

[ξ] Δ_2=Elementary School $Population_t$ – Elementary School $Population_{t-1}$; in 1990 the Elementary Student Population was 1,252.

[λ] The basic equation for net migration is $\Delta_2-\Delta_1$; that is, the actual change in elementary student population minus what it would have been without migration, i.e., replacing the G5 population at t-1 who move up to middle school by t with the new entrants at K in t, with all other grades having all students staying and moving up one grade. The difference $(\Delta_1-\Delta_2)$ is the net migration that occurred.

Table 8B

Net Migration at the Middle School Level: 1990-2007

	$G5_{t-1}$	$G8_{t-1}$	Δ_1 without migration[ς]	Middle School $Population_t$	Δ_2[ξ]	Net Migration[λ]
t= 1991-92	195	195	0	626	+31	+31
1992-93	186	208	-22	620	-6	+16
1993-94	212	213	-1	625	+5	+6
1994-95	229	221	+8	638	+13	+5
1995-96	217	206	+11	650	+12	+1
1996-97	232	200	+32	696	+46	+14
1997-98	271	234	+37	740	+44	+7
1998-99	253	225	+28	772	+32	+4
1999-00	216	239	-23	747	-25	-2
2000-01	235	274	-39	734	-13	+26
2001-02	239	272	-33	753	+19	+52
2002-03	231	236	-5	775	+22	+27
2003-04	212	264	-52	756	-19	+33
2004-05	211	287	-76	693	-63	+13
2005-06	199	241	-42	676	-17	+25
2006-07	199	243	-44	658	-18	+26
2007-08	220	228	-8	653	-5	+3
2008-09	186	222	-36	644	-9	+27
Last 10 years: $\sum$ 1998-2007			-358		-128	+230
Last 5 years: $\sum$ 2003-2007			-206		-112	+94
Last 8 years: $\sum$ 2000-2007			-296		-90	+206

ς Δ_1 at t = $G5_{t-1} - G8_{t-1}$

ξ Δ_2=Middle School $Population_t$ – Middle School $Population_{t-1}$; in 1990 the Middle School Student Population was 595.

λ Net migration is Δ_2-Δ_1.

Table 8C

Net Migration at the High School Level: 1990-2007

	$G8_{t-1}$	$G12_{t-1}$	Δ_1 without migration[ς]	High School $Population_t$	Δ_2[ξ]	Net Migration[λ]
t= 1991-92	195	205	-10	755	-23	-13
1992-93	208	155	+53	794	+39	-14
1993-94	213	196	+17	781	-13	-30
1994-95	221	162	+59	837	+56	-3
1995-96	206	182	+24	867	+30	+6
1996-97	200	195	+5	891	+24	+19
1997-98	234	204	+30	907	+16	-14
1998-99	225	226	-1	914	+7	+8
1999-00	239	215	+24	956	+42	+18
2000-01	274	220	+54	1018	+62	+8
2001-02	272	238	+35	976	-42	-76
2002-03	236	196	+40	980	+4	-36
2003-04	264	235	+29	977	-3	-32
2004-05	287	258	+29	984	+7	-22
2005-06	241	236	+5	981	-3	-8
2006-07	243	216	+27	996	+15	-12
2007-08	228	231	-3	965	-31	-28
2008-09	222	254	-32	971	+6	+38
Last 10 yrs: $\sum$ 1998-2007			+207		+57	-150
Last 5 yrs: $\sum$ 2003-2007			+26		-6	-32
Last 8 years: $\sum$ 2000-2007			+129		-47	-176

[ς] Δ_1 -3= $G8_{t-1} - G12_{t-1}$, i.e., G12 students move out and graduate and G8 students move into high school. Without migration, all other high school student+6ts are assumed to stay and move up one grade.

[ξ] Δ_2=High +19School $Population_t$ – High School $Population_{t-1}$; in 1990 the high school student population was 778.

[λ] Net migratio-14n is $(\Delta_2-\Delta_1)$ where Δ_2 is the change in high school students and Δ_1 is the counterfactual "what if" case depicting what if the high school population would have been with no migration—in or out. Thus, the difference $(\Delta_2 - \Delta_1)$ is net migration.

Table 9

Summary of "Net Migration" by Year And Level: 1990-2007[δ]

	Elementary School	Middle School	High School	Overall
1990-91	-10	+31	-13	+8
1991-92	+30	+16	-14	+32
1992-93	+2	+6	-30	-22
1993-94	-1	+5	-3	+1
1994-95	+26	+1	+6	+33
1995-96	+24	+14	+19	+57
1996-97	+14	+7	-14	+7
1997-98	+20	+4	+8	+32
1998-99	-11	-2	+18	+5
1999-2000	+8	+26	+8	+42
2000-01	+53	+52	-76	+29
2001-02	+4	+27	-36	-5
2002-03	-4	+33	-32	-3
2003-04	+33	+13	-22	+24
2004-05	+18	+25	-8	+35
2005-06	+49	+26	-12	+63
2006-07	+13	+3	-28	-12
2007-08	+13	+27	+38	+78
Σ1990-94	+47	+59	-54	+52
Σ1995-99	+55	+49	+39	+143
Σ2000-04	+99	+150	-174	+75
Σ2004-07 (4 years)	+93	+81	-10	+164
Last 10 years	+176	+230	-150	+256
Last 5 years	+126	+94	-32	+188
Last 8 years	+179	+206	-176	+209
Avg/Yr				
1990-94	+9.4	+11.8	-10.8	+10.4
1995-99	+11.0	+9.8	+7.8	+28.6
2000-04	+19.8	+30.0	-34.8	+15.0
2004-07	+23.3	+20.3	-2.5	+41.0
2000-07	+22.4	+25.8	-22.0	+26.1

[δ] Note: In this table, the "net migration" is for the year listed. However, Table 9 starts at K_t, i.e., at t; but all other exits and entrants (deduced or observed) pertain to t-1. Therefore, the "net migration" for years specified in Table 9 pertains to year t-1.

Table 10

Evidence of Net In-Migration of Families with Preschool Children by Municipality and Overall School District

Municipalities	Column A 2000 Census Children < 5 Yrs. Of Age	Column B Births 1995-99	Column C Net In-Migration (Preschoolers) Δ (A-B)	Column D Avg. No. of New Children per Year of Age (0-4)
Jefferson Hills Borough	480	485	-5	-1.0
Pleasant Hills Borough	437	413	+24	+4.8
West Elizabeth Borough	34	45	-11	-2.2
TOTAL	951	943	+8	+1.6

Table 11

Alternative School Enrollment by Level and Type of Schooling

PART 2																
	PRIVATE/PAROCHIAL			HOME SCHOOL				CYBER/CHARTER				∑			
	EL/MS	HS	∑	EL	MS	HS	∑	EL	MS	HS	∑	EL	MS	HS	∑
2000				6	2	4	12								
2001				5	3	2	10				3				
2002				8	7	3	18				3				
2003				10	5	3	18				13				
2004	196	43	239	7	2	5	14				18				271
2005	195	48	243	8	2	5	15				25				283
2006	164	43	207	4	4	5	13				37				257
2007	156	43	199	7	6	5	18				23				240
2008								5	5	10	20				
Δ 2004→07	-40	0	-40	0	+4	0	+4				+5				-31

Table 12

Total Student Enrollment in the
West Jefferson Hills School District
by Year and Level: 1990-2008[1]

School Yr.	Elementary	Middle	High School	Total	Δ
1990	1252	595	778	2625	
1991	1294 ↑	626 ↑	755 ↓	2675 ↑	+50
1992	1369 ↑	620 -	794 ↑	2783 ↑	+108
1993	1369 -	625 -	781 ↓	2775 ↓	-8
1994	1356 ↓	638 ↑	837 ↑	2831 ↑	+56
1995	1403 ↑	650 ↑	867 ↑	2920 ↑	+89
1996	1408 -	696 ↑	891 ↑	2995 ↑	+75
1997	1348 ↓	740 ↑	907 ↑	2995 -	0
1998	1330 ↓	772 ↑	914 ↑	3016 ↑	+21
1999	1274 ↓	747 ↓	956 ↑	2977 ↓	-39
2000	1221 ↓	734 ↓	1018 ↑	2973 -	-4
2001	1241 ↓	753 ↑	976 ↓	2970 -	-3
2002	1178 ↓	775 ↑	980 -	2933 ↓	-37
2003	1161 ↓	756 ↓	977 -	2894 ↓	-39
2004	1186 ↑	693 ↓	984 ↑	2863 ↓	-31
2005	1179 -	676 ↓	981 -	2836 ↓	-27
2006	1226 ↑	658 ↓	996 ↑	2880 ↑	+44
2007	1222 -	653 -	965 ↓	2840 ↓	-40
2008	1236 ↓	644 ↓	971 ↓	2851 ↑	+11
2009	1263 ↑	652 ↑	958 ↓	2873 ↑	+22
Δ 1990-2000	-31	+139	+240	+348	
Δ 2000-2009	+42	-82	-60	-100	
Δ 2000-2004	-35	-41	-34	-110	
Δ 2004-2009	+77	-41	-26	+10	

[1] End of year for 1990-2008, beginning of year (third day enrollment) for 2009.

Table 13

New Housing by Year by Municipality

	Jefferson Hills+		Pleasant Hills	Total δ
1993		(43)		43
1994		(40)		40
1995		(18)		18
1996		(23)		23
1997	30	(36)		30
1998	59	(60)		59
1999	45	(45)		45
2000	26	(27)		26
2001	40	(41)		40
2002	56	(55)		56
2003	55	(56)		55
2004	52		1	53
2005	49		6	55
2006	44		7	51
2007	36		5	41
2008	55		7	62
2009	39+		8+	47+

OVERALL AVERAGES BY PERIOD			
Period	Total	# Yrs.	Avg/Yr
1993-1994	83	2	41.5
1995-1997	77	3	25.7
1998-2001	170	4	42.5
2002-2008	347	7	49.6

+ Numbers in parentheses were provided by a Jefferson Hills Borough report. Numbers not in parenthesis were recorded directly from permit data and have development and address per year (cf. Table Z).

δ Totals for 1993-2003 include only Jefferson Hills Borough; hence, they are not comparable to those from 2004-23009, but they are all that are available and, at least, provide a floor, if not a cutting.

Table 14

Jefferson Hills Borough New Housing by Development by Year: 1997-2009

	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	Total
Patriot Pointe	25	36	9	16	10	0	0	0	0	0	0	0	0	96
Chamberlin Ridge	3	5	5	4	1	0	0	0	0	0	0	0	0	18
Check Drive	1	0	0	0	1	1	2	1	0	0	0	1	0	6
JE/JW	2	10	12	8	12	12	15	18	9	5	1	3	3	108
Scenery Hill	1	0	1	3	5	10	0	0	0	0	0	0	0	20
Stone Villa Estate	1	0	0	0	0	0	0	0	0	0	0	0	0	1
South Ridge	1	0	3	0	0	0	0	0	0	0	0	0	0	4
Hunters Field	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Castor Farms	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Towne Hall Estates	0	1	0	1	1	0	0	6	1	6	5	4	1	26
Woods of Jefferson	0	0	1	3	6	13	20	14	20	4	0	0	0	81
DiMarco	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Hickory Grove	0	0	0	2	0	1	0	0	0	0	0	0	0	3
The Oaks	0	0	0	0	2	2	1	3	0	0	1	4	0	13
Regency Estates	0	0	0	0	0	1	2	0	2	5	4	6	6	26
Jefferson Pointe Circle	0	0	0	0	0	0	0	0	0	0	20	32	8	60
Else	4	2	5	6	11	12	15	14	8	6	14	9	12	
Total	39	55	36	44	49	52	55	56	40	26	45	59	30	

Table 15

Current and Future Housing by Development—
Jefferson Hills Borough

	No. Units	No. Built	No. Left
1. Andrews Acres	29	0	29
2. Castor Farms	23	1	22
3. Chamberlin Ridge	114	18	96
4. DiMarco Plan	14	1	13
5. Hickory Grove	8	3	5
6. Hunters Field	334	1	333
7. Jefferson Estates/Woodlands	181	110	71
8. Mill School	82	0	82
9. Patriot Pointe	164	96	68
10. Scenery Hill (Phase 3/Scenic Court)	21	20	1
11. South Ridge	11	4	7
12. Stone Villa Estates	24	0	24
13. Woods of Jefferson	88	81	7
Total	1,093	335	758

Table 16

Student Housing Ratios

Housing Plan	No. Units+	No. Students	Student/Housing Ratios
Chamberlain Ridge	15	6	.400
Hickory Grove	3	1	.333
Jefferson Woodlands Estates	108	55	.509
Patriot Pointe	71	15	.211
Regency Estates	61	47	.770
Scenery Hill	19	23	1.211
Towne Hall Estates	61	50	.820
Woods of Jefferson	81	100	1.235
Total	419	297	.709

+ Pre2009

Table 17

West Jefferson Hills School District
Retention Ratios 2000-2007[ς]
Multi-Year Averages[ζ]

	2000-2003	2004-2007
K→G1	1.009	1.055
G1→G2	1.040	1.035
G2→G3	1.019	1.022
G3→G4	1.033	1.024
G4→G5	1.011	1.015
G5→G6	1.067	1.040
G6→G7	1.028	1.028
G7→G8	1.038	1.045
G8→G9	1.038	1.071
G9→G10	.882	.922
G10→G11	.954	.984
G11→G12	.966	.990
$B_{t-5} \rightarrow K_t$[1ξ]	1.043	1.101

[ς] Data for the retention ratios for 2004-2007 included student populations for 2004-2008—the end of school year enrollment; data for the retention ratios for 2000-2003 included student populations for 2001-2004—the end of school year enrollment.

[ξ] Four year averages for Birth at t-5 and Kindergarten enrollment at t, .e.g., the 2004-2007 header for B→K here refers to K in 2005-2008 and births from 2000-2003, similarly, except in the 2000-2003 header for B→K, the data refer to K in 2001-2004 and births from 1996-1999. For birth year t, since Oct. 1 is the cut-off for age 5, we use (.25) births in t-1+(.75) births in t for each year.

Table 18

West Jefferson Hills School District Forecasts per Grade: 2010-2019
Fertility/Aging/Embedded Growth Scenario #1
[Scenario I]*

	K	G1	G2	G3	G4	G5	Total K→G5	G6	G7	G8	Total G6→G8	G9	G10	G11	G12	Total G9 → G12	Total K → G12
2009	190	207	216	223	202	225	1263	230	193	229	652	237	238	232	251	958	2873
2010	186	200	214	221	228	205	1254	234	236	202	672	245	219	234	230	928	2854
2011	170	196	207	219	226	231	1249	213	241	247	701	216	226	215	232	889	2839
2012	173	179	203	212	224	229	1220	240	219	252	711	265	199	222	213	899	2830
2013	181	183	185	207	217	227	1200	238	247	229	714	270	244	196	220	930	2844
2014	176	191	189	189	212	220	1177	236	245	258	739	245	249	240	194	928	2844
2015	175	186	198	193	194	215	1161	229	243	256	728	276	226	245	238	985	2874
2016	175	185	193	202	198	197	1150	224	235	254	713	274	254	222	243	993	2856
2017	175	185	191	197	207	201	1156	205	230	246	681	272	253	250	220	995	2832
2018	175	185	191	195	202	210	1158	209	211	240	660	263	251	249	248	1011	2829
2019	175	185	191	195	200	205	1151	218	215	220	653	257	242	247	247	993	2797

	2009	2014	2019	Δ2014-2009	Δ2019-2014	Δ2019-2009
K→G5	1263	1177	1151	-86	-26	-112
G6→G8	652	739	653	+87	-86	+1
G9→G12	958	928	993	-30	+65	+35
Total	2873	2844	2797	-29	-47	-76

* This scenario uses the following parameters: (1) Baseline four-year retention ratios (2004-2007), as shown in Table 17; (2) Birth at t-5 to K enrollment ratio of 1.101; this is derived as follows: (a) a baseline t-5 birth to K enrollment ratio was estimated using 2000-2003 births and 2005-2008 K enrollments. For years 2010-2013, observed births in 2005-2008 in the West Jefferson Hills School District were used. For years 2014-2019, the average number of births from 2005-2008 was used (159); see Table 1. For each year we calculate the eligible birth cohorts for Kindergarten as (B_{t-6} x .25)+(B_{t-5} x .75), since Oct 1 is the cutoff for entry at age 5.

Table 19

West Jefferson Hills School District Forecasts per Grade: 2010-2019 Fertility/Aging/Embedded Growth Scenario #2: Lower Fertility [Scenario II]*

	K	G1	G2	G3	G4	G5	Total K→G5	G6	G7	G8	Total G6→G8	G9	G10	G11	G12	Total G9 → G12	Total K → G12
2009	190	207	216	223	202	225	1263	230	193	229	652	237	238	232	251	958	2873
2010	186	200	214	221	228	205	1254	234	236	202	672	245	219	234	230	928	2854
2011	170	196	207	219	226	231	1249	213	241	247	701	216	226	215	232	889	2839
2012	173	179	203	212	224	229	1220	240	219	252	711	265	199	222	213	899	2830
2013	181	183	185	207	217	227	1200	238	247	229	714	270	244	196	220	930	2844
2014	163	191	189	189	212	220	1164	236	245	258	739	245	249	240	194	928	2831
2015	156	172	198	193	194	215	1128	229	243	256	728	276	226	245	238	985	2841
2016	156	165	178	202	198	197	1096	224	235	254	713	274	254	222	243	993	2802
2017	156	165	171	182	207	201	1082	205	230	246	681	272	253	250	220	995	2758
2018	156	165	171	175	186	210	1063	209	211	240	660	263	251	249	248	1011	2734
2019	156	165	171	175	179	189	1035	218	215	220	653	257	242	247	247	993	2681

	2009	2014	2019	Δ2014-2009	Δ2019-2014	Δ2019-2009
K→G5	1263	1164	1035	-99	-129	-228
G6→G8	652	739	653	+87	-86	+1
G9→G12	958	928	993	-30	+65	+35
Total	2873	2831	2681	-42	-150	-192

* This scenario uses the following parameters: (1) Baseline four-year retention ratios (2004-2007), as shown in Table 17; (2) Birth at t-5 to K enrollment ratio of 1.101; this is derived as follows: (a) a baseline t-5 birth to K enrollment ratio was estimated using 2000-2003 births and 2005-2008 K enrollments. For years 2010-2013, observed births in 2005-2008 in the West Jefferson Hills School District were used. For years 2014-2019, a continuation of the decreases in births of -17 from 2000-04 to 2005-08 was used (142); see Table 1. For each year we calculate the eligible birth cohorts for Kindergarten as (B_{t-6} x .25)+(B_{t-5} x .75), since Oct 1 is the cutoff for entry at age 5. Thus, for 2014 we have .75 (142)+.25(165)=148 and from 2015 to 2019, we have 142/year.

Table 20

West Jefferson Hills School District Forecasts per Grade: 2010-2019
Fertility/Aging/Embedded Growth Scenario #3: Higher Fertility
[Scenario III]*

	K	G1	G2	G3	G4	G5	Total K→G5	G6	G7	G8	Total G6→G8	G9	G10	G11	G12	Total G9 → G12	Total K → G12
2009	190	207	216	223	202	225	1263	230	193	229	652	237	238	232	251	958	2873
2010	186	200	214	221	228	205	1254	234	236	202	672	245	219	234	230	928	2854
2011	170	196	207	219	226	231	1249	213	241	247	701	216	226	215	232	889	2839
2012	173	179	203	212	224	229	1220	240	219	252	711	265	199	222	213	899	2830
2013	181	183	185	207	217	227	1200	238	247	229	714	270	244	196	220	930	2844
2014	190	191	189	189	212	220	1191	236	245	258	739	245	249	240	194	928	2858
2015	194	200	198	193	194	215	1194	229	243	256	728	276	226	245	238	985	2907
2016	194	205	207	202	198	197	1203	224	235	254	713	274	254	222	243	993	2909
2017	194	205	212	212	207	201	1231	205	230	246	681	272	253	250	220	995	2907
2018	194	205	212	217	217	210	1255	209	211	240	660	263	251	249	248	1011	2926
2019	194	205	212	217	222	220	1270	218	215	220	653	257	242	247	247	993	2916

	2009	**2014**	**2019**	**Δ2014-2009**	**Δ2019-2014**	**Δ2019-2009**
K→G5	1263	1191	1270	-72	+79	+7
G6→G8	652	739	653	+87	-86	+1
G9→G12	958	928	993	-30	+65	+35
Total	2873	2858	2916	-15	+58	+43

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* This scenario uses the following parameters: (1) Baseline four-year retention ratios (2004-2007), as shown in Table 17; (2) Birth at t-5 to K enrollment ratio of 1.101; this is derived as follows: (a) a baseline t-5 birth to K enrollment ratio was estimated using 2000-2003 births and 2005-2008 K enrollments. For years 2010-2013, observed births in 2005-2008 in the West Jefferson Hills School District were used. For years 2014-2019, the number of births from 2000-04 to 2005-08 was used (176); see Table 1. For each year we calculate the eligible birth cohorts for Kindergarten as (B_{t-6} x .25)+(B_{t-5} x .75), since Oct 1 is the cutoff for entry at age 5. Thus, for 2014 the weighted average from 176 births in 2009 is .75 (176)+.25(165)=173; for 2015 to 2019, the continuation of 176 births per year yields 176.

Table 21

Table of Distribution for the Additional Expected Students per Grade per Year Stemming from Growth in Housing[+]

	2010	2011	2012	2013	2014	∑	2015	2016	2017	2018	2019	∑
K	1	1	1	1	2	6	2	3	2	2	3	18
G1	1	1	1	1	2	6	2	2	3	2	2	17
G2	1	1	1	1	2	6	2	2	3	2	2	17
G3	1	1	0	2	1	5	3	2	2	3	2	17
G4	1	0	1	2	1	5	3	2	2	3	2	17
G5	0	1	1	2	1	5	2	3	2	2	3	17
∑	5	5	5	9	9	33	14	14	14	14	14	103
G6	1	0	0	1	1	3	2	1	1	2	1	10
G7	0	1	0	1	1	3	1	2	1	1	2	10
G8	0	0	1	1	1	3	1	1	2	1	1	9
∑	1	1	1	3	3	9	4	4	4	4	4	29
G9	1	0	0	1	0	2	1	1	0	1	1	6
G10	0	1	0	0	1	2	1	1	1	0	1	6
G11	0	0	1	0	1	2	0	1	1	1	0	5
G12	0	0	0	1	0	1	1	0	1	1	1	5
∑	1	1	1	2	2	7	3	3	3	3	3	22
Total K→G12	7	7	7	14	14	49	21	21	21	21	21	154

[+] This includes the direct effects of housing growth beyond the baseline.

Table 22

West Jefferson Hills School District Forecasts per Grade: 2010-2019 Fertility/Aging/Growth Scenario #1: Full Impact of Growth from Housing [Scenario IV]*

	K	G1	G2	G3	G4	G5	Total K→G5	G6	G7	G8	Total G6→G8	G9	G10	G11	G12	Total G9 → G12	Total K → G12
2009	190	207	216	223	202	225	1263	230	193	229	652	237	238	232	251	958	2873
2010	187	201	215	222	229	205	1259	235	236	202	673	246	219	234	230	929	2861
2011	171	198	209	221	227	233	1259	213	243	247	703	216	228	215	232	891	2853
2012	174	181	207	214	227	231	1234	242	219	255	716	265	199	225	213	902	2852
2013	182	185	188	214	221	232	1222	241	250	230	721	274	244	196	224	938	2881
2014	178	194	193	193	220	225	1203	242	249	262	753	246	254	241	194	935	2891
2015	177	190	203	200	201	225	1196	236	250	261	747	282	228	250	240	1000	2943
2016	178	189	199	209	207	207	1189	235	245	262	742	281	261	225	248	1015	2946
2017	177	191	199	205	216	212	1200	216	243	258	717	281	260	258	224	1023	2940
2018	177	189	200	206	213	221	1206	222	223	255	700	277	259	257	256	1049	2955
2019	178	189	198	206	213	219	1203	231	230	234	695	274	256	255	255	1040	2938

	2009	2014	2019	Δ2014-2009	Δ2019-2014	Δ2019-2009
K→G5	1263	1203	1203	-60	0	-60
G6→G8	652	753	695	+101	-58	+43
G9→G12	958	935	1040	-23	+105	+82
Total	2873	2891	2938	+18	+47	+65

* This scenario uses the following parameters: (1) Baseline four-year retention ratios (2004-2007), as shown in Table 17; (2) Birth at t-5 to K enrollment ratio of 1.101; this is derived as follows: (a) a baseline t-5 birth to K enrollment ratio was estimated using 2000-2003 births and 2005-2008 K enrollments. For years 2010-2013, observed births in 2005-2008 in the West Jefferson Hills School District were used. For years 2014-2019, the number of births from 2000-04 to 2005-08 was used (159); see Table 1. For each year we calculate the eligible birth cohorts for Kindergarten as (B_{t-6} x .25)+(B_{t-5} x .75), since Oct 1 is the cutoff for entry at age 5. Additionally, in this scenario, we include the full impact of growth from housing beyond the baseline.

Table 23

Table of Distribution for the Additional Expected Students per Grade per Year Stemming from the Growth Due to Housing (Scenario V)

		2010	2011	2012	2013	2014	Σ	2015	2016	2017	2018	2019	Σ
GILL HALL	K	1	1	0	1	0	3	1	0	1	0	0	5
	G1	1	1	0	1	0	3	1	0	0	1	0	5
	G2	1	0	1	0	1	3	0	1	0	0	1	5
	G3	1	0	1	0	1	3	0	1	0	0	0	4
	G4	0	1	1	0	0	2	1	1	0	0	0	4
	G5	0	1	0	1	0	2	1	1	0	0	0	4
	Σ	4	4	3	3	2	16	4	4	1	1	2	27
JEFFERSON	K	1	0	0	0	1	2	0	1	0	1	0	4
	G1	0	1	0	0	0	1	1	0	1	0	1	4
	G2	0	0	1	0	0	1	1	0	1	0	1	4
	G3	0	0	0	1	0	1	1	0	1	0	1	4
	G4	0	0	0	1	0	1	0	1	0	1	0	3
	G5	0	0	0	0	1	1	0	1	0	1	0	3
	Σ	1	1	1	2	2	7	3	3	3	3	3	22
McCLELLAN	K	0	0	1	0	1	2	2	1	1	2	2	10
	G1	0	0	0	1	1	2	1	2	1	2	2	10
	G2	0	0	0	1	1	2	1	1	2	2	1	9
	G3	0	0	0	1	1	2	1	1	2	2	1	9
	G4	0	0	0	1	1	2	1	1	2	1	2	9
	G5	0	0	0	1	1	2	1	1	2	1	2	9
	Σ	0	0	1	5	6	12	7	7	10	10	10	56
Total	K	2	1	1	1	2	7	3	2	2	3	2	19
	G1	1	2	0	2	1	6	3	2	2	3	3	19
	G2	1	0	2	1	2	6	2	2	3	2	3	18
	G3	1	0	1	2	2	6	2	2	3	2	2	17
	G4	0	1	1	2	1	5	2	3	2	2	2	16
	G5	0	1	0	2	2	5	2	3	2	2	2	16
	Σ	5	5	5	10	10	35	14	14	14	14	14	105

Table 24A

Gill Hall Elementary School
Forecasts per Grade: 2010-2019
Fertility/Aging/ Growth Scenario
[Scenario Va]*

	K	G1	G2	G3	G4	G5	Total K→G5
2009	42	57	62	59	56	52	328
2010	37	45	60	64	60	57	323
2011	36	40	47	61	67	62	313
2012	43	38	42	49	63	68	303
2013	40	46	39	43	50	65	283
2014	39	42	49	41	44	51	266
2015	40	42	43	50	43	46	264
2016	39	42	44	45	52	45	267
2017	40	41	43	45	46	53	268
2018	39	43	42	44	46	49	261
2019	39	41	46	43	45	47	261

	Δ2014-2009	Δ2019-2014	Δ2019-2009	ΔPeak	Peak Size
Overall	-62	-5	-67	-67	328

* This scenario uses the following parameters: (1) Baseline four-year retention ratios (2004-2007), as shown in Table 17; (2) Birth at t-5 to K enrollment ratio of 1.101. For years 2009-2013, the observed births from 2005-2008 in West Jefferson and Pleasant Hills Boroughs were used, with a percent share allocated from each--.451 (West Jefferson) and .011 (Pleasant Hills). For years 2014-2019, an estimate was made of the average number of births in the same municipalities (See Table 1, bottom panel), with the same percentage share allocated from each. The estimate is based on an average of the 2005-2008 births in each municipality. Here the weighted average was 35.

Table 24B

Jefferson Elementary School
Forecasts per Grade: 2010-2019
Fertility/Aging/ Growth Scenario
[Scenario Vb]*

	K	G1	G2	G3	G4	G5	Total K→G5
2009	97	95	104	104	96	117	613
2010	90	102	98	106	106	97	599
2011	92	96	106	100	109	108	611
2012	89	97	100	108	102	111	607
2013	94	94	100	103	112	104	607
2014	88	99	97	102	105	115	606
2015	88	94	103	100	104	107	596
2016	89	93	97	105	103	107	594
2017	88	95	97	100	108	105	593
2018	89	93	98	99	103	111	593
2019	88	95	97	101	101	105	587

	Δ2014-2009	Δ2019-2014	Δ2019-2009	ΔPeak	Peak Size
Overall	-7	-19	-26	-26	613

* This scenario uses the following parameters: (1) Baseline four-year retention ratios (2004-2007), as shown in Table 17; (2) Birth at t-5 to K enrollment ratio of 1.101. For years 2009-2013, the observed births from 2005-2008 in West Jefferson and Pleasant Hills Boroughs were used, with a per cent share allocated from each--.538 (West Jefferson), .433 (Pleasant Hills) and 1.00 (West Elizabeth). For years 2014-2019, an estimate was made of the average number of births in the same municipalities (See Table 1, bottom panel), with the same percentage share allocated from each. The estimate is based on an average of the 2005-2008 births in each municipality. Here the weighted average was 80.

Table 24C

McClellan Elementary School
Forecasts per Grade: 2010-2019
Fertility/Aging/ Growth Scenario
[Scenario Vc]*

	K	G1	G2	G3	G4	G5	Total K→G5
2009	51	55	50	60	50	56	322
2010	54	54	57	51	61	51	328
2011	48	57	56	58	52	62	333
2012	43	51	59	57	59	53	322
2013	50	46	54	61	59	61	331
2014	49	54	49	56	63	61	332
2015	50	53	57	51	58	65	334
2016	49	55	56	59	53	60	332
2017	49	53	59	59	62	56	338
2018	50	54	57	62	61	64	348
2019	50	55	57	59	65	64	350

	Δ2014-2009	Δ2019-2014	Δ2019-2009	ΔPeak	Peak Size
Overall	+10	+18	+28	+28	350

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* This scenario uses the following parameters: (1) Baseline four-year retention ratios (2004-2007), as shown in Table 17; (2) Birth at t-5 to K enrollment ratio of 1.101. For years 2009-2013, the observed births from 2005-2008 in West Jefferson and Pleasant Hills Boroughs were used, with a per cent share allocated from each--.011 (West Jefferson), and .556 (Pleasant Hills). For years 2014-2019, an estimate was made of the average number of births in the same municipalities (See Table 1, bottom panel), with the same percentage share allocated from each. The estimate is based on an average of the 2005-2008 births in each municipality. Here the weighted average was 44.

THE ENROLLMENT PROJECTION MODEL

GENERAL

The enrollment projection model used by the Pennsylvania Department of Education (PDE) is patterned after projection models variously called educational progression or school retention. Projection models of this nature are based on the concept that students progress routinely from one grade to another and that any internal policies and external factors that influenced grade progression in the past will continue to influence the progression of students from grade to grade in the future.

The PDE model uses enrollment data reported annually by all local education agencies to the Division of Data Services on the Public School Enrollment Report (ESPE). Resident live birth data is provided by the Pennsylvania Department of Health. Grade progression is determined by calculating retention rates for grades 2 to 12 using the most recent five years of enrollment data. Retention rates for kindergarten are determined by births five years earlier and for first grade from births six years earlier. These rates are evaluated to determine if a pattern is discernable, or if any retention rates are unusual. If a pattern is found, the pattern is continued in making the projections. Unusual retention rates are discarded and the average of the remaining rates is used in making the projections. Nongraded elementary and secondary students are prorated across grades before retention rates are calculated. Because of that proration, the number of students shown in various grades will differ from the number of students reported. The total number of students may also differ slightly.

BASIC LIMITATIONS OF THE MODEL

1. Internal policy changes that can affect the accuracy of projections
   a. policy on how old a child must be before being admitted into kindergarten and first grade
   b. policy on when and how a student is evaluated for special education services
   c. policy on how many students the area vocational-technical school is to receive
   d. policy on who provides full-time special education programs
   e. policy on scholastic retention and acceleration

2. External factors that can affect the accuracy of projections
   a. the opening or closing of a nonpublic school
   b. a significant increase or decrease in new home building
   c. a shift in migration patterns

3. Other considerations
   a. Enrollment projections for school districts with less than 1,000 students tend to be less reliable.
   b. Actual live birth data for the most recent year are added annually. However, enrollment projections beyond five years are subject to errors in the lower grades resulting from inconsistencies between actual and projected live births and should be reviewed closely.

Revised: 7/2011 (2010 Enrollments)

Enrollment Projections
Prepared by the Pennsylvania Department of Education
(717) 787-2644

West Jefferson Hills SD **1-03-02-955-3**

YEAR	K	1	2	3	4	5	6	7	8	9	10	11	12	Total
2006-2007	186	183	209	209	179	216	205	214	221	255	249	282	263	2871
2007-2008	199	204	184	213	212	186	220	209	218	240	248	255	277	2865
2008-2009	190	212	211	198	216	219	192	226	223	235	232	249	246	2849
2009-2010	190	203	213	218	201	224	230	195	235	239	242	233	261	2884
2010-2011	182	203	198	217	219	206	225	230	194	239	228	239	236	2816
P R O J E C T I O N S														
2011-2012	190	186	204	205	220	226	211	229	237	197	234	229	239	2807
2012-2013	180	194	187	212	207	227	232	214	236	241	193	235	229	2787
2013-2014	202	184	195	194	215	214	233	236	220	240	236	194	235	2798
2014-2015	197	206	185	202	196	222	220	237	243	224	235	237	194	2798
2015-2016	201	202	207	192	204	203	228	223	244	247	220	236	237	2844
2016-2017	204	205	203	215	194	211	208	232	230	248	242	221	236	2849
2017-2018	208	209	206	210	218	201	217	211	239	234	243	243	221	2860
2018-2019	211	212	210	214	213	225	206	220	217	243	229	244	243	2887
2019-2020	215	216	213	218	217	220	231	209	227	221	238	230	244	2899
2020-2021	218	220	217	221	221	224	226	235	215	231	217	239	230	2914

Various Grade Groupings of the Enrollment Projections

YEAR	K-4	K-5	K-6	K-7	K-8	K-9	K-12	5-8	6-8	7-8	6-9	7-9	7-12	8-12	9-12	10-12
2010-2011	1019	1225	1450	1680	1874	2113	2816	855	649	424	888	663	1366	1136	942	703
2015-2016	1006	1209	1437	1660	1904	2151	2844	898	695	467	942	714	1407	1184	940	693
2020-2021	1097	1321	1547	1782	1997	2228	2914	900	676	450	907	681	1367	1132	917	686
2010-2011 to 2020-2021																
Change	78	96	97	102	123	115	98	45	27	26	19	18	1	-4	-25	-17
Percent	7.7	7.8	6.7	6.1	6.6	5.4	3.5	5.3	4.2	6.1	2.1	2.7	0.1	-0.4	-2.7	-2.4

Notes:
1. Excludes students in full-time out-of-district special education, comprehensive AVTSs, charter schools, state-owned schools, consortium-operated alternative high schools, and juvenile correctional institutions.
2. Enrollment projections beyond five years are subject to errors in the lower grades resulting from inconsistencies between actual and projected live births and should be reviewed closely.
3. Four year old kindergarten students, if any, added to K enrollments.
4. Elementary and secondary ungraded students were distributed among the grades. Therefore, enrollments by grade may differ from those reported by the local education agencies.

Sources:
1. Public School Enrollment Report (ESPE) and Pennsylvania Information Management System (PIMS)
2. Resident Live Birth file, 2009, supplied by the Division of Health Statistics, PennsylvaniaDepartment of Health. The Department of Health specifically disclaims responsibility for any analyses, interpretations or conclusions.

Revised: 7/2011 (2010 Enrollments)

West Jefferson Hills SD **1-03-02-955-3**

Retention Rates by Grade by Year

	Birth to K	Birth to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	10 to 11	11 to 12
2006-2007 to 2007-2008	1.15029	1.21429	1.00546	1.01914	1.01435	1.03911	1.01852	1.01951	1.01869	1.08597	0.97255	1.02410	0.98227
2007-2008 to 2008-2009	1.28378	1.22543	1.03431	1.07609	1.01408	1.03302	1.03226	1.02727	1.06699	1.07798	0.96667	1.00403	0.96471
2008-2009 to 2009-2010	1.08571	1.37162	1.00472	1.03318	1.01515	1.03704	1.05023	1.01563	1.03982	1.07175	1.02979	1.00431	1.04819
2009-2010 to 2010-2011	1.17419	1.16000	0.97537	1.01878	1.00459	1.02488	1.00446	1.00000	0.99487	1.01702	0.95397	0.98760	1.01288

Rates Used in Projection Enrollments

1.17349	1.19991	1.00496	1.03679	1.01204	1.03351	1.02636	1.01560	1.03009	1.01702	0.98074	1.00501	1.00201

Average Retention Rates for All Years

1.17349	1.24283	1.00496	1.03679	1.01204	1.03351	1.02636	1.01560	1.03009	1.06318	0.98074	1.00501	1.00201

Year	Births	Year	Births	Year	Births	Year	Births	Year	Births
2001	168	2002	173	2003	148	2004	175	2005	155
2006	162	2007	153	2008	172	2009	168	2010	171
2011	174	2012	177	2013	180	2014	183	2015	186

West Jefferson Hills School District

PRESENTATION
KNOWLEDGE BASED WORKSHOP
DISTRICT FACILITY STUDY

November 14 and 19, 2012

PROJECT TEAM

Peter F. Szymanski, AIA
LEED BD+C, REFP, PMI
Senior Project Manager, LEED Manager

Ryan M. Pierce, AIA
President and CEO
Principal-in-Charge

David W. Nitchkey
Director of Architecture
Lead Design Architect

PRESENTATION AGENDA

- District-wide Facility Study
- Overview of Work to Date
- Stakeholder Workshop
- Next Steps
- Questions and Comments

JC PIERCE llc

FACILITY STUDY GUIDELINES

- **Basic Education Circular (BEC) 24 P.S. § 7-733**, "School Construction Reimbursement Criteria," explains the requirement for school building district-wide facility studies as a condition for reimbursement.

- Overview of School District's Communities(I.E. Geography, population, wealth, etc.);
- Overview of School District's Educational Program;
- Analysis of Current and Projected Enrollment;
- Analysis of District/ Building Capacities;
- Analysis of each Building's Physical Characteristics;
- Analysis of District/ Construction Options;
- Cost Estimates for each Option;
- Summary/ Analysis of Buildings, Options, and Cost;
- Authors' Credentials.

JC PIERCE llc

OVERVIEW WORK TO DATE

JC Pierce, llc was asked to Conduct a District-Wide Master Planning Study:

Where are you now?

- Review all Relevant Hard Data on District Facilities
- Review and Analyze Enrollment Projections
- Tour all Facilities and Document Existing Conditions

Where do you want to go?

- **Obtain Stakeholder Input (Knowledge Base Workshops)**
- **Meet with District Administration**
- **Interview Building Administrators and Staff**

How are you going to get there?

- Determine Strategic Goals from Stakeholder Data
- Develop Strategic Options
- Evaluate Options against Strategic Goals

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WORKSHOP AGENDA

Step 1.0 Review Concept of Project

Step 2.0 Educational Specifications

Step 3.0 Critical Circulation Patterns

Step 4.0 Communications and I / S

Step 5.0 Architectural Spaces

Step 6.0 Athletic Facilities

Step 7.0 Community

Step 8.0 Wrap-Up and Next Steps

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R E V I E W   C O N C E P T   O F   P R O J E C T

1.0 Review Concept of Project

1.1 Project Objectives and Philosophy:

1. ***What are the primary goals and objectives of this Master Planning process? What do you want to accomplish with this process?***

2. ***What are the roles that the Board, Staff, Community (parents, students, others), and other stakeholders should play in this process?***

3. ***What is the District's Mission (Mission Statement)? What is the District's long-term Vision?***

4. ***What are the guiding Philosophies and Values of the School District? Board? Staff?***

5. ***What are the Significant Issues that must be solved for this Master Plan and process to be considered a success?***

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R E V I E W   C O N C E P T   O F   P R O J E C T

1.2 Quality Life Objectives:

1. ***How would you describe the present Quality of Life in the West Jefferson Hills School District?***

2. ***What changes would/should this process/program impart on the current quality of life?***

3. ***What should stay the same after this process,…what would you like to "not lose".***

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R E V I E W   C O N C E P T   O F   P R O J E C T

1.3 References and Perceptions:

1. ***How is West Jefferson Hills School District perceived by members of the District (i.e. Board, Administrators, Parents, Students, Community Stakeholders who live and work in the District)?***

2. ***Who do you consider to be your "neighboring" School Districts? To whom do you compare your District?***

3. ***How does the West Jefferson Hills School District compare to neighboring School Districts (Educationally, Cost/Value, Facilities, Safety, Desirability, etc.)?***

4. ***Who are the Best-in-Class School Districts in your region/area. What aspects of those Districts would you like to emulate?***

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R E V I E W   C O N C E P T   O F   P R O J E C T

1.3 References and Perceptions (Continued):

5. ***Can you cite any examples of similar district models, educational structures, philosophies, amenities, or best practices that you are aware of that could be a good model for your district, when/if upgraded?***

6. ***What is the District's biggest strength and biggest weakness or liability?***

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EDUCATIONAL SPECIFICATIONS

2.0 Educational Specifications

2.1 Educational Plan:

1. ***What are the current Demographic Trends in the District?***
2. ***Do you anticipate any significant changes to your formal Educational Plan?***
3. ***Are there current documented Educational Specifications – related to facilities? (Space standards, program requirements and square footages, equipment needs, etc.)***
4. ***What major or significant teaching concepts are traditionally used for education delivery? Do you envision these changing to adapt to updated facilities, or will the facilities be upgrade to adapt to the current Education Delivery Plan?***
5. ***What are the options you think should be considered for structuring/accommodating future changes in Demographics? (Grade structure, feeder patterns, travel patterns, building capacity issues, etc.)***

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CRITICAL CIRCULATION PATTERNS

3.0 Critical Circulation Patterns

3.1 User Flow:

1. ***What are the current transportation/circulation issues that affect the District?***
2. ***What are the significant circulation issues at each facility in the District?***
3. ***Is the District considering consolidation or expansion to address circulation or demographic issues, and if so, what are the advantages and disadvantages of consolidation or expansion?***

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COMMUNICATION/ INFORMATION

4.0 Communications and Information Systems

4.1 Communication and Information System Facilities:

1. ***What are the current communication and information systems throughout the District, and what upgrades are required, anticipated, or desired?***

2. ***What is the vision for the District's Technology and Communications Systems in the short and long term?***

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ARCHITECTURAL SPACES

5.0 Architectural Spaces:

5.1 Architectural Spaces:

1. ***On a large scale, are there any program spaces required, which are currently not available at District facilities? Is the District lacking any spaces/facilities that are inhibiting educational or extracurricular curriculum delivery?***

2. ***How would you rate or compare your educational facilities relative to neighboring/competing Districts? Is this a significant issue for concern, or a secondary concern?***

3. ***Is there parity of facilities, curriculum, and opportunity across the District? Are there any issues in this area that needs to be addressed?***

4. ***In anticipation of undesirable events, what special safety and security measures are necessary? Does the District have an Emergency Management Plan?***

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ARCHITECTURAL SPACES

5.1 Architectural Spaces (Continued):

5. ***What is the District's philosophy on environmental quality in it's buildings (i.e. natural lighting requirements, HVAC requirements, air conditioning, operable windows, acoustical, etc.)?***

6. ***Is Green Building technology or LEED certification required/desirable for facilities?***

7. ***Does the District have established levels for durability, low maintenance, and life-cycle cost in materials, finishes and systems?***

8. ***Are there any examples of similar facilities that you are aware of that could be a good model for your facilities, when/if upgraded?***

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ATHLETIC FACILITIES

6.0 Athletic Facilities

6.1 Facilities Overview:

1. ***What are the current athletic facilities within the District?***

2. ***Are these facilities superior, adequate, or insufficient for planned or desired athletic program needs?***

3. ***How are these facilities used by the District and Community?***

4. ***What level of educational vs. extra-curricular use do athletic facilities receive?***

5. ***How would you rate or compare your athletic facilities relative to neighboring/competing Districts? Is this a significant issue for concern, or a secondary concern?***

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ATHLETIC FACILITIES

6.1 Facilities Overview (Continued):

6. ***Are there transportation or circulation issues related athletic facilities?***
7. ***What are the most critical issues related to athletic facilities in the District?***
8. ***Are there any examples of similar facilities that you are aware of that could be a good model for your facilities, when/if upgraded?***

6.2 Balance:

1. ***What priority does the District put on athletic facilities?***
2. ***Should athletic facilities be considered in conjunction with other work at a given site, or independent of other work?***

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COMMUNITY

7.0 Community

7.1 Community Services/Involvement:

1. ***Who are the community groups who you consider "Stakeholders"?***
2. ***How should the community be integrated into the Master Planning and/or design process?***
3. ***What methods should be employed for gathering community input and data?***
4. ***What is the best method for disseminating information to the community/Stakeholders?***

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COMMUNITY

7.2 Funding:

1. ***What is the current state of the District's finances – with regard to capacity to fund building projects or facilities upgrades?***

2. ***What plans are in place to fund building projects or capital improvements recommended and/or adopted as part of the Master Planning process?***

3. ***Is there an established limitation for funding a building program?***

4. ***What are your views with regard to tax increases to fund building projects?***

5. ***Are alternative sources of funding available?***

6. ***What is your view on the length of a building program vs. the size or possibility of tax increases?***

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NEXT STEPS

- **Knowledge Base Workshops – November2012**
- **User Group Macro Interviews – October/ November2012**
- **Establishment of Strategic Goals – December 2012**
- **Development of Options,**
  Presentations, and Feedback – December2012
- **Final Report – January 2012**
  - **Options, Cost, Pros and Cons**
  - **Analysis and Recommendations**
  - **All Back-up Data**
- **Board Review Phase – First Quarter 2013**
  - **Review/ Acceptance**
  - **Board Action to Adopt Plan/Options**
- **Schedule and Implement Plan – Immediately after Board Action**

JC PIERCE llc

QUESTIONS

360 Lincoln Avenue
Pittsburgh, PA 15202
Ph: 412 307-0100
rpierce@jc-pierce.com

Ryan M. Pierce, AIA
President & CEO

AGENDA – Knowledge Base Workshop

Project: **West Jefferson Hills School District**
Strategic Master Planning Study

JC Pierce will lead a process that we have developed entitled *"Strategic Master Planning for Schools (SMPS)".* This process was developed to identify what would be a successful project outcome for all District Stakeholders. An integral part of this process is the *Knowledge Base Workshop*. In this workshop, we will ask a series of questions that will prompt discussion and debate about the needs and desires of the Stakeholders. The primary objective of this discussion is to develop the **Strategic Goals** of the master plan or project, and identify the intangible parameters by which "success" will be measured. As the project proceeds, all project-related decisions will be evaluated against the Strategic Goals that our team (District, Consultant, and Stakeholders) will create together.

This process is an open and collaborative one. All information will be recorded and documented. Previously asked questions, and the resultant answers, may be revisited, based on subsequent questions. The ultimate goal of the Strategic Master Planning Process is to produce project options - and to evaluate them in terms of the documented knowledge about stakeholder expectations and requirements related to quality of life in the School District.

Each discussion item is written in the form of a question. Our desire is to stimulate discussion and debate, and to foster a team environment. Each team member (Stakeholder) can apply their experience-based knowledge to positively affect the final form of the Master Plan. The results of this session should produce a *Design Guidelines Statement* for the team.

Recommended Attendees:

First Workshop: Board and Administrators
Board Members and/or Board Steering Committee
District Administration
- Superintendent
- Business Manager
- Facilities Director
- Transportation Director (select sections of the workshop)
- Technology Director (select sections of the workshop)
- Athletic Director (select sections of the workshop)

Building Principals
- High School
- Middle Schools
- Elementary Schools

Others as may be identified

Second Workshop: Faculty and Staff (note: This Workshop can be combined with First Workshop)
Board Members and/or Board Steering Committee
District Administration
- Superintendent
- Business Manager
- Facilities Director

Building Principals (Optional)
Curriculum Representatives (Faculty and Staff as Identified by District)
- High School
- Middle School
- Elementary
- Special Education

Others as may be identified

Third Workshop: Community and Parents
Board Members and/or Board Steering Committee
District Administration
- Superintendent
- Business Manager
- Facilities Director

Building Principals
- High School
- Middle Schools
- Elementary Schools

Community Stakeholders
- PTA's
- Booster Groups
- Parents
- Open to Public Input

Others as may be identified

Agenda for the Session:

1.	Step 1.0	Review Concept of Project	45 minutes	6:00 to 6:45
2.	Step 2.0	Educational Specifications	15 minutes	6:45 to 7:00
3.	Step 3.0	Critical Circulation Patterns	15 minutes	7:00 to 7:15
4.	Step 4.0	Communication and I/S	15 minutes	7:15 to 7:30
5.	Break		15 minutes	7:30 to 7:45
6.	Step 5.0	Architectural Spaces	30 minutes	7:45 to 8:15
7.	Step 6.0	Athletic Facilities	30 minutes	8:15 to 8:45
8.	Step 7.0	Community and Funding	30 minutes	8:45 to 9:15
9.	Wrap up and next steps		5 minutes	9:15 to 9:30
Total			**3.5 hours**	

1.0 **REVIEW CONCEPT OF PROJECT** (45 minutes)

1.1 Project Objectives and Philosophy:

- What are the primary goals and objectives of this Master Planning process? What do you want to accomplish with this process?
- What are the roles that the Board, Staff, Community (parents, students, others), and other stakeholders should play in this process?
- What is the District's Mission (Mission Statement)? What is the District's long-term Vision?
- What are the guiding Philosophies and Values of the School District? Board? Staff?
- What are the Significant Issues that must be solved for this Master Plan and process to be considered a success?

1.2 Quality Life Objectives:

- How would you describe the present Quality of Life in the West Jefferson Hills School District?
- Is it different from school to school, or from community to community within the District?
- What changes would/should this process/program impart on the current quality of life?
- What should stay the same after this process,…what would you like to "not lose".

1.3 References and Perceptions:

- How is West Jefferson Hills School District perceived by members of the District (i.e. Board, Administrators, Parents, Students, Community Stakeholders who live and work in the District)?
- Who do you consider to be your "neighboring" School Districts? To whom do you compare your District? How do they perceive you?
- How does the West Jefferson Hills School District compare to neighboring School Districts (Educationally, Cost/Value, Facilities, Safety, Desirability, etc.)?
- Who are the Best-in-Class School Districts in your region/area, and how does West Jefferson Hills School District compare to them?
- Can you cite any examples of similar district models, educational structures, philosophies, amenities, or best practices that you are aware of that could be a good model for your district, when/if upgraded?
- What is the "best" thing about the West Jefferson Hills School District? What is the "worst" thing about the District?
- What is the District's biggest strength and biggest weakness or liability?

2.0 **EDUCATIONAL SPECIFICATIONS** (15 minutes)

2.1 Educational Plan:

- What are the current demographic trends in the District?
- Is a current formal Educational Plan in place? Will it be retained, changed?
- Are there current documented educational specs – related to facilities? (Space standards, program requirements and square footages, equipment needs, etc.)
- What major or significant teaching concepts are traditionally used for education delivery? Do you envision these changing to adapt to the facilities, or will the facilities adapt to the education delivery plan?
- What are the options for structuring/accommodating future changes in demographics? (Grade structure, feeder patterns, travel patterns, building capacity issues, etc.)

3.0 **CRITICAL CIRCULATION PATTERNS** (15 minutes)

3.1 User Flow:

- What are the transportation/circulation issues/patterns across the District?
- What are the significant circulation issues at each facility in the District?
- Is the District considering consolidation or expansion to address circulation or demographic issues, and if so, what are the advantages and disadvantages of consolidation or expansion?

4.0 **COMMUNICATION AND INFORMATION SYSTEMS** (15 minutes)

4.1 Communication and Information System Facilities

- What are the current communication and information systems throughout the District, and what upgrades are required?
- What is the vision for the District's Technology and Communications Systems in the short and long term?

BREAK (15 minutes)

5.0 **ARCHITECTURAL SPACES** (30 minutes)

5.1 Architectural Spaces:

- On a large scale, are there any program spaces required, which are currently not available at District facilities? Is the District lacking any spaces/facilities that are inhibiting educational or extracurricular curriculum delivery?
- How would you rate or compare your educational facilities relative to neighboring/competing Districts? Is this a significant issue for concern, or a secondary concern?
- Is there parity of facilities, curriculum, and opportunity across the District?
- In anticipation of undesirable events, what special safety and security measures are necessary? Does the District have an Emergency Management Plan?
- What is the District's philosophy on environmental quality in it's buildings (i.e. natural lighting requirements, HVAC requirements, air conditioning, operable windows, acoustical, etc.)?
- Is Green Building technology or LEED certification required/desirable for facilities?
- Does the District have established levels for durability, low maintenance, and life-cycle cost in materials, finishes and systems?
- Are there any examples of similar facilities that you are aware of that could be a good model for your facilities, when/if upgraded?

6.0 **ATHLETIC FACILITIES** (30 minutes)

6.1 Facilities Overview

- What are the current athletic facilities within the District?
- Are these facilities superior, adequate, or insufficient for planned or desired athletic program needs?
- How are these facilities used by the District and Community?
- What level of educational vs. extra-curricular use do athletic facilities receive?
- How would you rate or compare your athletic facilities relative to neighboring/competing Districts? Is this a significant issue for concern, or a secondary concern?
- Are there transportation or circulation issues related athletic facilities?
- What are the most critical issues related to athletic facilities in the District?
- Are there any examples of similar facilities that you are aware of that could be a good model for your facilities, when/if upgraded?

6.2 Balance:

- What priority does the District put on athletic facilities?
- Should athletic facilities be considered in conjunction with other work at a given site, or independent of other work?

7.0 **COMMUNITY AND FUNDING ISSUES** (30 minutes)

7.1 Community Services/Involvement

- Who are the community groups who you consider "Stakeholders"?
- How should the community be integrated into the Master Planning process?
- What is the best method for gathering community input and data?
- What is the best method for disseminating information to the community/Stakeholders?

7.2 Funding

- What is the current state of the District's finances – with regard to capacity to fund building projects or facilities upgrades?
- What plans are in place to fund building projects or capital improvements recommended and/or adopted as part of the Master Planning process?
- Is there an established limitation for funding a building program?
- What are your views with regard to tax increases to fund building projects?
- Are alternative sources of funding available?
- What is your view on the length of a building program vs. the size or possibility of tax increases?

8.0 **WRAP-UP AND NEXT STEPS** (5 minutes)

360 Lincoln Avenue
Pittsburgh, PA 15202
Ph: 412 307-0100
rpierce@jc-pierce.com

Ryan M. Pierce, AIA
President & CEO

The Following are the notes taken during the WJHSD – Workshop 1 November 14, 2012:

1.11

Campus Settings HS & MS?
Housing Booming
Less children/class size
Facility ratio
Community Growth
No trailers
New technologies
Long term capacity
Over crowing in ES
Technology / science
"District of Choice"
Better facilities
Pride in
Pride in community not in HS

1.12

Facilities equal to quality of District
Better communication
Technology / social media
Public participation at Board Meeting
Meeting notes: email/facebook/twitter
Knowledgeable community members
Community committees for design/construction
No mass mailers?
Televised meetings
Listen to community

Philosophies
Prepare children for shrinking world
Opportunities in the world
Education 1st?
Community strength
Safety
Bias of football?
State of the art facilities
Arts education
Diverse/equal opportunities
Excellent education
Health environment

1.2

Excellent teachers, parents, community
Poor high school
Disparity BTW communities?
Inequity in Elementary Schools
Crowding in ES
ES's & MS better facilities than the HS

What is Good?

Quality of teachers & education
Utilize strength of teachers
Maintain low class size
Top 20 W. PA Districts

Comparable Districts

USC	Model
South Park	Mt. Lebo
West Mifflin	NA
Mt. Lebo	USC
Peters	FAC
	South Fayette

Better education or comparable not facilities
Need to compare to good AAA Districts

MO
WJHSD < 3K
Moon <3.6K
Need State-of-Art Facilities

*Education
Children excellent achievements in spite of facilities
*Current & future capacities needs flexibility

3.0
HS site entry
Mc & GH site entry
PHMS site entry
Bus vs car traffic issues
Parking GH & Mc & PHMS & HS
Emergency access & evacuation
Furthest bus route to leave first?

4.0
Better computers, ipads, online learning? Skype?
Need better parity in grade levels / schools
Better curriculum / teacher / technology

5.0
Spaces lacking
Daycare AM/PM
Cyber classrooms
1.B Program
Year round school?
A/C
Full day Kindergarten?
High School curriculum spaces?

Parity of Facilities?
Diff. Class size
Curriculum
S.E.
Homework
Mc vs GH

Jefferson head school?
Greater Reading
Intramural program
5 days of accelerated

Parity Physical Facilities not curriculum

*Safety & Security

Better lock down / door hardware
Secured rooms

District has emergency plan
H.S. needs locks on lockers
Student I.D.s / card readers
Security / Police Office at H.S.
Metal detectors

6.0
No Natatorium

Shortage of athletic fields
Football, soccer, baseball, softball

Limited H.S. gym space

Precedents

South Fayette – all facilities
Rostraver – Baseball / Soccer (too big)
Baldwin / Bethel Park - Basketball
West Mifflin – Football / Basketball

7.0 Stakeholders

Students, Tax Payers, Community Org. , Youth Sports, PTA, Local Businesses, Municipal Governments, AARP, Senior Citizens Centers, etc.

7.1

Misconception USC MT Lebo has comparable taxes

360 Lincoln Avenue
Pittsburgh, PA 15202
Ph: 412 307-0100
rpierce@jc-pierce.com

Ryan M. Pierce, AIA
President & CEO

The Following are the notes taken during the WJHSD – Workshop 1 November 19, 2012:

1.0
- Set long / short term goals for facilities – optimal learning env.
- Development of long-term mainten. plan / schedule
- Plan that endures beyond present
- "Students are primary focus" Mission is a collab. process.
- How do we foster that environment
- <u>Everybody</u> plays equally important role collab. process
- Quality education program - Exceptional / Innovative
- <u>Public Awareness</u>
- Needs assessment
- Address future needs for growth MS / HS *
- Parental engagement

1.2 Quality of Life
- People want to come back (Multi-generational)
- Test. to education they receive
- Proud of their community
- SD is "Nucleus"/ "Engine" of the comm.

1.3 Perception
- Kids get a good education
- <u>Misconception</u> / belief that parity does not always exit in elems.
- Perception – Discip. prob in HS
- Less involved believe – the above
- Many "Rumors"
- Misconception – High taxes
- "Pride" – We compare well to neighbors
- Don't want to be imitation of others
- Don't want to compare
- Be best we can be at being us.
- Stay focused on education of our kids
- Money well spent on inside

2.1
- Prof. Demographer – Shelby Stewman
- Flat overall growth
- Area imbalance at Elem Level
- Mobility w/in community
- Changes to Ed Plan will be part of strategic plan
- Com. Core standards – revised plan
- Involve tech. more – more on line learning

- Forward thinking technology
- Cyber Ed must be addressed
- Small group – very little “Whole Group”
- Personalized Ed Plan for each student
- Very creative use of facilities

3.0
- This year - rerouting of buses
- Reduce times
- Efficiency
- Land locked bldgs.
- Events parking
- Drive circ. Around bldg HS traffic flow
- Daily congestion at McClellan
- Looking at supplementing avail. parking
- Security at HS – drive around bldg.
- PH Police are cooperative
- Presb. Church is cooperative

4.0
- Begun to look at Tech in terms of curric. needs – have a “Tech Plan” curric. integration
- Forward looking
- Early 2013 adoption
- Every classroom utilizes technology
- District-wide wireless
- Dist. Tech Study – Phase I (HS) complete
- Marriage Tech & Curriculum

5.0
- High School Building is in need of modernization
- Elem redistricting addressed – needs at Gill Hall
- No issues at Jeff Elem
- Some buildings were brought forward - HS was neglected (maintenance)
- HS is old but clean, safe, children are learning
- 20 year window on H – 2013
- Tech issues at some bldgs – infrastructure
- Size of Gym at MS / size of Cafeteria
- Library modernization
- It is important to <u>some</u> people
- Want WJHSD to be “Envy” of other districts
- Not everybody understands all the implications of what other do.

- There is an EM Plan Security
- Wish to look at card access
- Parts of the plan are necc. private

- Interior rooms park on lock down at McClellan Envir
- MS LGI acoustics must be looked at
- up date for energy savings on lighting
- AC in Elem / MS
- Some noise issues
- Creative scheduling at HS - Band
- Noise transmission issues at HS
- Elem Gym PA System issues - acoustics
- Storage at HS
- No established facilities standards
- Need to develop these <u>District Wide</u>
- Balance aesthetics w/durability
- Solve minor – Day/Day issues first
- The "Cheapest isn't necc. the Best"
- Create procedures that allow for easier purging
- Focus on low <u>maintenance</u>

1. HS Stadium – Field House / Press Box / Conc.
   Elec capac in conc stand
   Turf at stadium field
2. Softball Field
   Can they be turf?
3. Baseball Field – Practice space
4. Elem Gyms (3)
   Acoustics/PA System Positive – sep. gym
   Divider at GH / McClellan
5. Tee Ball Fields at Jeff / GH
6. Cross Country Track
7. HS Gym / Aux Gym – out dated / Functionality / Safety Logistics
8. Wrestling Room
9. Tennis Courts
10. MS Gym
    Size / Bleachers
11. MS Practice Field
12. Weight Room
13. HS / MS Exercise Rooms
    (HS) Phys Ed Room

- Swimming Pool
- Look at Title IX
- Baseball Field – no scoreboard – evec issue
- Durability of Facilities
- Water infiltrating Field House
- Separate Ath. Facilities from Ed space
- Separate access

- Sept – March (7) days till 9:30 / 10:00 PM
  All Gyms used by Community
  No charge to use Gym – Phara makes contributions
- Organizations make donations

- Football Field
  CH Batch
  Soccer
  WPIAL Playoff – Pay for actual cost
  Youth Football

- Drop off for students for games
- Early pick up / drop off issues at HS
- Bleachers

BALANCE
- Education first
- Address all issues equally
- Many more issues related to education than athletics
- Approach athletics within the <u>context of education</u>
- Athletics are a compliment to education

AUDITORIUM
- Sound
- HVAC
- Lighting
- Seating

COMMUNITY :
Parents
Residents-
Students
Staff
Admin
COG
Histor. Society
Local Busi GPS
Senior Citizens

- Open workshop / forums
- Senior's less mobile
  - Take show on the road
  - Outreach
- District outreach to talk to rotary, other groups, local churches,
  - Administrators
* Convey the importance of a good school district to the community

- Use "in Community" magazine to disseminate in
- Invite them in
  Pancake breakfast
  Post Signs
  Mailers may not be answered
  "Invite into the better"
  Use newspapers

FUNDING:
<u>Capital reserve fund</u>
  Cap Improvements
  Pension
  HC costs

- Project forward 5 years
- See where this is in current tax rates
- Develop millage impact
- Referendum is possible

TAXES:
- What are the options?
- May not be required – Act 1 Referendum

PUBLIC COMMENT:

DEFENSABLE DOCUMENT

Mission
Facilitate Learning

1.2 Q4-Life

Great place to live
Maintains population – families
School District as hub of communities
Boroughs w/o borders

1.3
The District is a good value for high performing students

Family values – generational
* Be the beat WJHSD we can be
Value (Bang for your Buck)
Engage parents

2.1 Shelby Stewman Study

PA - JH migration?

Separate ES development
Revision of EP due to state req'mt
District strategic planning process
1.3M to Cyber School
SM Group instruction / not one size fits all
Progressive instruction

3.0 Versi-Trend Business Software
- Reduced bus time/pickups

- Buildings land locked

Entry/site circulation/parking
Limited separation between bus vs car - Pedestrians vs vehicles
H.S. security – access to full site before arriving at main entrance
Cooperation with community/churches for additional parking at PHMS & MES

4.0
New Technology Plan
Currently updating technology infrastructure

Every classroom uses technology
Bring your own technology Cyber learning

Up dated technology policies

5.0

- ES good after bldg products & redistricting
- Noise migration

Demountable partitions at HS & HS
Partition which do not extend to structure
Shop & Band in HS

West Jefferson Hills School District
District-wide Facilities Master Plan Study

Existing Conditions Report Summary

Ryan M. Pierce, AIA
Principal-in-Charge
Lead Master Planner

Peter F. Szymanski, AIA
Senior Project Manager
Educational Planner

David Nitchkey
Director of Architecture
Lead Design Architect

August 21, 2012

Project Objective

Conduct a District-wide Facilities Master Plan Study to Evaluate the Current Condition of the District's Physical Plant and Demographic Trends.

Identify the District's Strategic Goals

Analyze and Present Short and Long-Term Options for ensuring Optimal Learning Environments for all Students in all Grades

SMPS: Strategic Master Planning for Schools

Three Phases answers Three Questions:

Where are you now?

- What is the current state of the District's Facilities, and How do they Meet the District's Current Needs?

Where do you want to go?

- What is your vision? What are your needs, wants, Strategic Goals?

How are you going to get there?

- What is your strategy? What are your Options?

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Agenda

- Overview of Work to Date
- Review of Building Conditions Report Format
- Overview of District Structure and Demographic Study
- Overview of Report by Building
- High and Medium Priority Items
- Next Steps

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Overview: Work to Date

Completed Existing Conditions Analysis:

- Reviewed Demographic Study
- Reviewed Feeder/Transportation Patterns
- Advised on 2012 Elementary Redistricting Plan
- Completed Exterior and Interior Assessments at all District Buildings
- Addressed Some Needs/Concerns during summer 2012 Maintenance Projects and Phase I Technology Upgrade Project

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Review: Building Conditions Report Format

Report Format:

- Introduction
- Narrative Report on Each Building's Current Conditions
  - Exterior Envelope
  - Interior Structure/Finishes
  - Mechanical/Electrical/Plumbing
  - Technology Systems
  - Current Educational Plan Needs
  - Capacity Needs/Issues
- Prioritized Needs/Issues
  - Low Priority
  - Medium Priority
  - High Priority
- Recommendations

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Review: Building Conditions Report Format

Report Format: Priority Definitions

- High Priority:
  - Safety/Liability Hazards
  - Threats to the Integrity of Building Envelope (Windows, Roofs, etc)
  - Indoor Air Quality Issues or Mold
  - Issues that become more costly to address as repair is delayed
  - Building Capacity issues
- Medium Priority:
  - Issues that currently cause the District to incur cost or endure ongoing inconvenience
  - Issues that could develop into High Priority issues over time
- Low Priority:
  - All other issues

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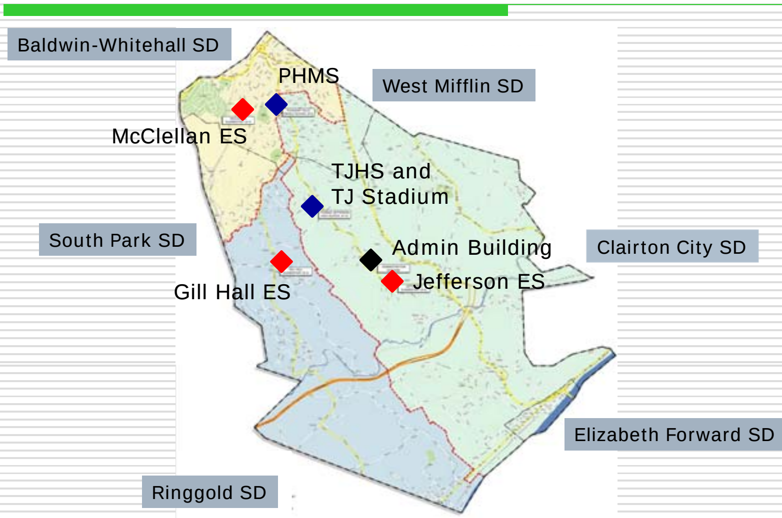
Overview: District Structure



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Overview: District Structure

District Operates 5 Schools:

School Name	Grade Config.	Current Enrollment	Year Built	Last Renovated
Thomas Jefferson HS	9-12	905	1957	1991
Pleasant Hills MS	6-8	664	1965	2006
Jefferson ES	K-5	555	1993	N/A
McClellan ES	K-5	388	1957	2002
Gill Hall ES	K-5	278	1962	2002
Total Enrollment:		2,790		

District also Operates:

	Year Built	Last Renovated
District Administration Building	1974	N/A
TJHS Stadium/Field House	2002	N/A

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Overview: Demographic Study

- Demographic Study: 2009 by Professor Shelby Stewman from Carnegie Mellon University
- Conclusions in Stewman 10 Year Projections:
  - Elementary: 204/Grade (current)
  - Middle: 221/Grade (current)
  - High: 226/Grade (current)
  - Generally Flat overall Growth
  - Elementary Enrollment is stable, with Potential for Growth
  - Projected Loss at TJHS and PHMS
  - Much Unpredictability due to Uncertain Housing Development(s)
- Reality:
  - Overall Growth/Loss has matched projections, but in different locations
  - Elem. Growth: Faster than Expected

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Condition Summary: Common Issues

Common Conditions/Issues:

- 2012 Elementary Redistricting has addressed Capacity Issues and Short Term Growth at all Elementary Buildings
- Capacity is Adequate at all Buildings (but TJHS has some issues)
- All recently renovated Buildings are in Good Condition
- No major Educational Program issues at any Building (except TJHS)
- Site/Access/Parking Issues at all Buildings (except Jefferson ES)
- Lack of Air Conditioning is an Issue
- Technology Upgrades needed at all Buildings (addressed through current Tech Upgrade Project(s)

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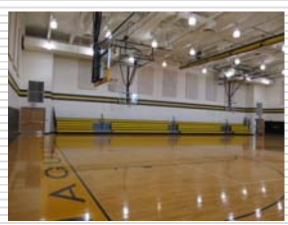
Condition Summary: Common Issues

How does WJHSD Generally Compare?

- Elementary Facilities match or exceed those of neighboring districts
- Elementary Athletic Facilities exceed neighboring districts
- Middle School Facility is average compared to neighboring districts (except in athletic facilities, where it is below average)
- High School Facility is inferior to neighboring districts
- TJHS Stadium/Field House matches or exceeds neighboring Districts
- Other Athletic Facilities are inferior to neighboring districts (Baseball, Swimming, Practice Facilities, etc.)



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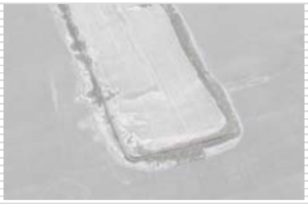
Condition Summary: Gill Hall (2002)

General:
- Building is Generally in Excellent Condition
- Capacity Exists for Minor Growth

High Priority Issues:
- Replace Old EPDM Roofing
- Install Air Conditioning
- Replace T-12 Ballasts and Lamping



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Condition Summary: Gill Hall (2002)

Medium Priority Issues:
- Increase Paved Parking Area
- Improve Site Circulation: Drop-Off/Pick-up
- Install Lighting Controls
- Investigate Circuit Board/Power Issue and Repair
- Repair Gym Equipment Motors

Budget: Address High Priority Issues:
- $750,000 - $1,000,000

Budget: Address Med. Priority Issues:
- $250-350,000

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Condition Summary: McClellan (2002)

General:

- Building is Generally in Excellent Condition
- Capacity Exists for Minor Growth
- Complete Build-out of Hunter's Field Plan will likely create a Long-term Capacity Issue

High Priority Issues:

- Address Attic Access Issue for HVAC Units
- Install Roof Access Ladder
- Install Air Conditioning
- Remove Stair Handrail Extensions
- Replace T-12 Ballasts and Lamping
- Continue Crack Monitoring in Gym

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Condition Summary: McClellan (2002)

Medium Priority Issues:

- Install Lighting Controls
- Adjust location of Emergency Generator
- (Note: Parking is an issue, but no reasonable short-term solution may exist)

Budget: Address High Priority Issues:

- $500,000 - $750,000

Budget: Address Med. Priority Issues:

- $50-100,000

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Condition Summary: Jefferson (1993)

General:

- Building is Generally in Good Condition
- Capacity Exists for Minor Growth
- Building is ready for general upgrades due to age

High Priority Issues:

- Install Air Conditioning and address Control and other HVAC Issues
  - Indoor Air Quality
  - Protect Finishes/Equipment
  - Control Issues (Pneumatics)
  - Address Condensing Unit CU-3
- Replace EPDM Roofing

Condition Summary: Jefferson (1993)

High Priority Issues (continued):

- Remove Stored Items from Boiler Room
- Replace T-12 Ballasts and Lamping
- Address Masonry Pointing/Repair
- Reinstall Coping at Main Entrance
- Replace Domestic HW Unit
- Add New Canopy above Boiler Room Door

Condition Summary: Jefferson (1993)

Medium Priority Issues:

- Install Lighting Controls
- Upgrade Interior Finishes throughout
- Replace ACT Ceilings throughout
- Replace windows and exterior doors
- Replace Paging System (Address in Technology Project)
- Replace Plumbing Fixtures with high efficiency fixtures

Budget: Address All Issues:
(A General Renovation Project Should be Considered)

- $3-6 million

Condition Summary: PHMS (2006)

General:

- Building is Generally in Excellent Condition
- Capacity Exists for Minor Growth

High Priority Issues:

- Install Air Conditioning to Remaining Spaces
- Repair Retaining Wall and Sidewalk
- Repair Water Leak at Cafe AHU
- Replace Floor Electrical Receptacles w/Code Compliant Receptacles
- Waterproof Tele Service Conduits
- Address Roof Service Ladder Safety/Code Compliance
- Replace Rusted gas Piping on Roof

Condition Summary: PHMS (2006)

Medium Priority Issues:

- Install Lighting Controls
- Ventilate Loading Dock Area
- Repair Inoperable Receptacles
- Reprogram Auto Emergency Generator Start-up and Testing
- Repair Magnetic Hold Opens at Stair D3 Doors
- Increase Egress Lighting (LGI)
- Depower Abandoned and Disconnected Switches at Roof

Budget: Address High Priority Issues:

- $500,000 - $750,000

Budget: Address Med. Priority Issues:

- $200-300,000

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Condition Summary: TJHS (1991)

General:

- Building is Generally in Poor Condition
- Capacity Exists for Minor Growth
- Nearly all Mechanical, Electrical, Plumbing Systems are at or beyond life-span – Maintenance Headache
- Interior Finishes are dated and worn-out
- 1991 Renovation infilled Courtyard and closed off Windows in many classrooms
- 1991 Renovation created unusual spaces and abnormal circulation patterns
- Way-finding in/around Auxiliary Gym is very poor

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Condition Summary: TJHS (1991)

Safety/Site Circulation/Exterior:

- Counter-clockwise traffic pattern causes bus/car criss-cross conflict
- "Front" Entrance to building is non-descript and has no sense of "entry"
- Paving is deteriorating, and has been repaired multiple times
- Student parking lot is in poor condition
- Landscaping along Old Clairton Road is in poor condition
- Site has a new Marquee Sign
- Traffic tie-ups occur on Old Clairton Road at arrival/dismissal
- Very Inadequate Event Parking

Condition Summary: TJHS (1991)

Building Envelope Issues:

- Roof is 21 year old EPDM Rubber Membrane – typical lifespan is 12 years. Numerous roof leaks present
- Masonry has several areas requiring pointing
- Window system is deteriorated (seals, frames, etc)
- Aluminum entrances are deteriorating, and HM Doors are rusting
- Water is infiltrating into EFIS, masonry, and window systems

Condition Summary: TJHS (1991)

Interior Finish Issues:

- Terrazzo and CT are serviceable, and can be maintained
- Carpet and VCT is in poor condition
- ACT is "cupped" in all areas
- In general, all interior finish systems have an outdated, worn-out appearance, and are need of replacement
- There are numerous program deficiencies resulting from the outdated design of the building and it's condition
- Athletic Facilities are substantially sub-par when compared to current state-of-the-art examples
- Building is not ADA compliant

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Condition Summary: TJHS (1991)

Mechanical Systems:

- HVAC System is over 20 years old (older in some areas), and in very poor condition
- A few Units were replaced in 2007
- Several Units only run in Winter
- No Classroom A/C or Humidity Control
- Kitchen ventilation equipment is good, and functioning properly
- Auditorium A/C is too noisy to operate during performances
- Original Boilers (55 years old)
- Boiler Room lacks sufficient combustion air – air is drawn from the building – CO2 Build-up possible

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Condition Summary: TJHS (1991)

Mechanical Systems (continued):

- HVAC System is very inefficient by modern standards
- Much of the roof-top ductwork is badly corroded
- Control issues with System and some units
- Several Toilet Rooms do not have functional ventilation systems
- Tech-Ed Area ventilation systems have convoluted ductwork, and are marginally functional

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Condition Summary: TJHS (1991)

Electrical Systems:

- Electrical Service was upgraded in 1991
- Some of the original panels were retained in 1991 – power distribution is a mixture panels from different eras
- Generator is from 1991, functions well
- 1991 era fire alarm system is functional, but outdated, and not presently code-conforming
- Lighting is T-12 Fluorescent –T-12 lamps are rapidly being phased out
- Library has no light switches. Switching at breaker is not code-compliant and is a safety hazard

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Condition Summary: TJHS (1991)

Plumbing Systems:

- Plumbing Fixtures are from 1991, and are worn and outdated
- Toilet and Urinal Flush Valves are not Automatic
- Original domestic HW Boiler still in use – ongoing maintenance issue
- Sprinklers are present only in some storage rooms
- HW heating pumps are "throttled" with a discharge valve – very inefficient/energy waster

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Condition Summary: TJHS (1991)

High/Medium Priority Issues:

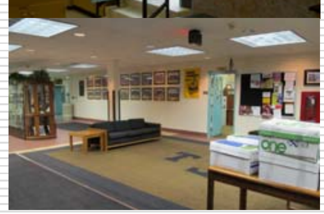
- Replace Roof
- Replace Windows and Doors
- Masonry Pointing Required
- Replace all MEP Systems/Equip.
- Make necessary ADA/Code Improvements
- Replace Gymnasium Bleachers
- Building requires a Comprehensive Exterior/Interior Renovation or Replacement

Budget: Renovation:

- $35-50 million

Budget: Replacement:

- $50-65 million



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Condition Summary: Admin Bldg (1974)

General:

- Building is in Fair Condition
- Little Maintenance and/or upgrading has occurred in 38 years
- Building is ready for general renovation due to age/condition

High Priority Issues:

- Replace Roof
- Replace Windows and Doors
- Masonry Pointing Required
- Make necessary ADA/Code Improvements (Elevator)
- Upgrade Interior Finishes
- Replace T-12 Lighting

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Condition Summary: Admin Bldg (1974)

Medium Priority Issues:

- Add Lighting Control System
- Remove old Wiring and Antenna from Roof
- Upgrade the Building Electrical System/Service
- Replace Mechanical equipment and address Humidity Concerns
- Address Exterior Parking and ADA Issues

Budget: Address High Priority Issues:

- $300-450,000

Budget: Address Med. Priority Issues:

- $200-300,000

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Condition Summary: TJ Stadium (2002)

General:

- Stadium and Field House are in Good Condition

High Priority Issues:

- Visually Monitor Water Infiltration Stair wall(s) – Field House
- Upgrade Technology at Press Box
- Repair Circuit Breaker Panel
- Elevate Press Box Posts

Condition Summary: TJ Stadium (2002)

Medium Priority Issues:

- Replace Artificial Turf
- Replace Running Track
- Improve perimeter drainage around Track/Field
- Install large make-up air louver in Concession Stand to improve ventilation

Budget: Address High Priority Issues:

- $10-20,000

Budget: Address Med. Priority Issues:

- $700-900,000

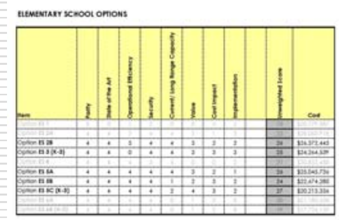
Next Steps: Visioning and Options

Visioning/Goal Setting:

- Informational Survey
- Knowledge-Base Workshops
- Establish Strategic Goals

Options Development:

- Develop Options to Address Strategic Needs
- Cost Modeling
- Presentations and Evaluation of Options
- Select Preferred Option
- Refine Preferred Option and Adopt Strategic Facilities Plan



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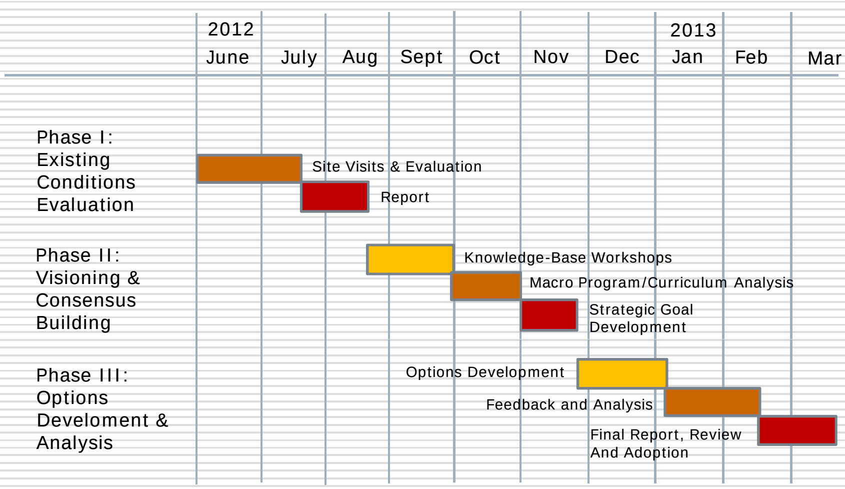
Project Timeline



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West Jefferson Hills School District

District-wide Facilities Master Plan Study

Wrap Up

Questions and Discussion

August 21, 2012

JC PIERCE

West Jefferson Hills School District

District-wide Facilities Master Plan Study

Summary of Facilities Strategic Goals

Ryan M. Pierce, AIA
Principal-in-Charge
Lead Master Planner

WJHSD

January 15, 2013

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Agenda

- Overview of Work to Date
- Presentation of Strategic Goals
- Next Steps

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Overview: Work to Date

Completed:
Phase I: Existing Conditions Analysis:

- Reviewed Demographic Study
- Reviewed Feeder/Transportation Patterns
- Advised on 2012 Elementary Redistricting Plan
- Completed Exterior and Interior Assessments at all District Buildings
- Addressed Some Needs/Concerns during summer 2012 Maintenance Projects and Phase I Technology Upgrade Project

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Overview: Work to Date

Phase II: Visioning

- Conducted Stakeholder Workshops with Board, Administrators and Public
- Conducted Interviews with District Admin and Staff at All Buildings
- Compiled Data from Stakeholder Interactions
- Drafted Strategic Goals and Reviewed with Committee and Administration
- Finalized Strategic Goals

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Strategic Goals: Definition

Webster's Dictionary: "Strategy"
"Carefully worked out plan of action…"

Strategic Goals are:

- "Big Picture"
- Define the Criteria for Success of the Masterplanning Process
- Derived from the Vision, Wants, and Needs of the Stakeholders
- Can be Abstract or Specific
- Must be Achievable
- Achievement can be evaluated or determined Objectively or Subjectively

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Strategic Goals: Goals

1. Curriculum Drives Facilities

Definition:

Facilities decisions are based on the District's Educational Program/Plan, and desire to create Optimal Learning Environments.

Optimal Learning Environments are defined as those which promote the highest potential for learning for all students, while addressing each child's unique needs and individual capacity for learning and growth.

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Strategic Goals: Goals

2. Modernize High School Facilities

Definition:

Address the physical deficiencies at the High School building to create a building or structure that is capable of facilitating 21st century curriculum and learning.

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Strategic Goals: Goals

3. Address Long Term District Growth

Definition:

Assuming that community development and housing growth occurs, assure that there is a specific, practical, and feasible plan for addressing capacity at all District schools.

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Strategic Goals: Goals

4. Derived from "Our" Unique Needs

Definition:

Assure that any solution implemented can be justified by the West Jefferson Hills School District Strategic Plan, Mission, and Vision.

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Strategic Goals: Goals

5. Implementation/Feasibility

Definition:

Facilities Options/Solutions must be technically feasible, and must be able to be implemented within the physical, educational, and financial parameters of the School District.

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Strategic Goals: Goals

6. Operational Efficiency

Definition:

Facilities must be durable, and provide enduring, long-term solutions to practical problems. Facilities improvements must mitigate to the greatest extent possible, the District's need to incur similar/related major costs for 20-30 years.

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Strategic Goals: Goals

7. Fiscal Responsibility

Definition:

Facilities Options/Solutions must balance first costs and funding issues/strategies against implementation issues, operational issues, and long-term viability/durability.

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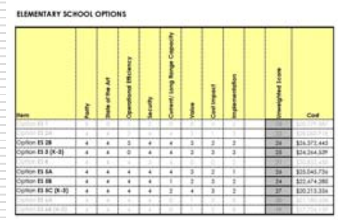
Next Steps: Options Presentation/Evaluation

Options Development:

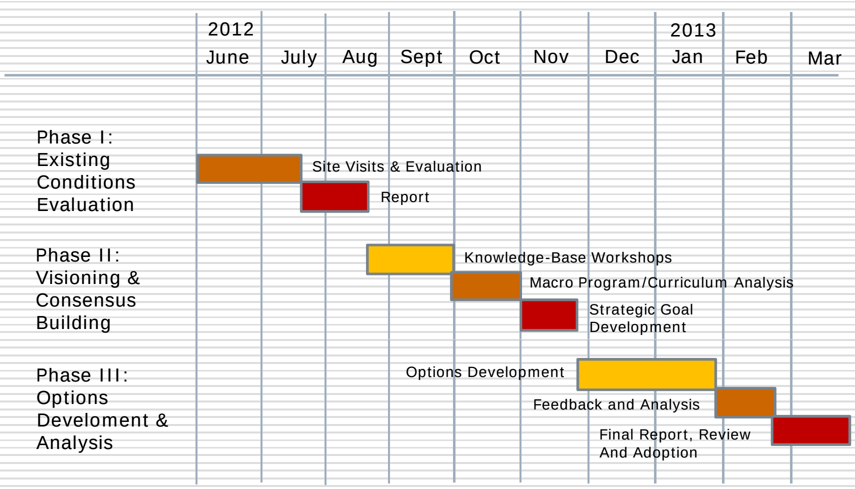
- Develop Options to Address Strategic Needs
- Cost Modeling
- Presentations and Evaluation of Options

Options Evaluation:

- Rank Options per Strategic Goals
- Select Preferred Option(s)
- Refine Preferred Option(s) and Adopt Strategic Facilities Plan


ELEMENTARY SCHOOL OPTIONS

Project Timeline



West Jefferson Hills School District

District-wide Facilities Master Plan Study

Wrap Up

Questions and Discussion

January 15, 2013

West Jefferson Hills School District

District-wide Facilities Master Plan Study

Options to Address Facilities Issues

Ryan M. Pierce, AIA
Principal-in-Charge
Lead Master Planner

Peter F. Szymanski, AIA
Senior Project Manager
Educational Planner

David Nitchkey
Director of Architecture
Lead Design Architect

February 4, 2013

Agenda

- Overview of Work to Date
- Categories of Strategic Issues
- Strategic Options
- Next Steps
- Questions and Comments

Summary: Strategic Issues

Issues Identified in the Existing Conditions Report and Visioning Process can be grouped into three Categories:

- Asset Protection Work
  (Maintaining Existing Facilities)
- Capacity/Growth Options
  (Address Potential Future Growth)
- High School Modernization
  (Renovation or Replacement)

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Summary: Budget Calculations

How Project Budgets are Derived:

- All “Budgets” are Estimates
  (Based on Information from Past Projects, Input from Industry Professionals, and our Construction Management Database)
- All Budgets Include “Hard” and “Soft” Costs
- Budgets for High School Projects Assume PlanCon Reimbursement
- Hard Costs: Cost of Construction
- Soft Costs: Everything Else
  (Design, Legal, Financing Fees, as well as Permitting Costs, and Property Acquisition, Etc.)

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Issues: Asset Protection

Asset Protection Issues:

- Technology Infrastructure at All Buildings
- Roof Replacement at Gill Hall, Jefferson, PHMS
- Air Conditioning at All Buildings
- Lighting and Energy Efficiency at Gill Hall, Jefferson, and McClellan
- TJHS Stadium Turf and Track
- New Bleachers at TJHS Gym
- Retaining Wall/Sidewalks at PHMS
- Parking and Site Circulation at Gill Hall

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Issues: Asset Protection - Technology

Asset Protection Issues:

- **Technology Infrastructure Upgrades**
  - **Phase I (TJHS)** – Summer 2012
    Cost: $353,000
  - **Phase II (PHMS)** – Summer 2013
    Budget: $499,000
  - **Phase III (JES)** – Summer 2014
    Budget: $387,500
  - **Phase IV (GH/MES)** – Summer 2015
    Budget: $401,800

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Issues: Asset Protection - Roofing

Asset Protection Issues:

- **Roof Replacement**
  - **Jefferson Elementary School**
    Replace in Summer 2014
    Combine with Technology/AC
    Budget: $781,824 (Roofing Only)
  - **Gill Hall Elementary School**
    Replace in Summer 2015
    Budget: $518,288
  - **Pleasant Hills Middle School**
    Existing Roof is 15 Years Old
    Replace within 10-Years
    Budget: $1,060,571

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Issues: Asset Protection – Air Conditioning

Asset Protection Issues:

- **Air Conditioning**
  - **Jefferson Elementary School**
    Install Summer 2014
    Combine with Technology/Roofing
    Budget: $700,000 (AC Only)
  - **Pleasant Hills Middle School**
    Install Summer 2015
    Budget: $1,000,000
  - **McClellan Elementary School**
    Install Summer 2016
    Combine with Gill Hall ES
    Budget: $950,000 (MES AC Only)
  - **Gill Hall Elementary School**
    Install Summer 2016
    Combine with McClellan ES
    Budget: $800,000 (GH Only)

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Issues: Asset Protection – Lighting/Energy

Asset Protection Issues:

- **Lighting/Energy Replacement And Lighting Controls**
  - **Jefferson Elementary School**
    Combine with Tech/AC/Roofing
    Budget: $750,000 (Elec. Only)
  - **McClellan Elementary School**
    Combine with Gill Hall ES
    Budget: $575,000
  - **Gill Hall Elementary School**
    Combine with McClellan ES
    Budget: $300,000
  - Potential Opportunity for Federal Grants and Utility Company Rebate Programs if this Work is Pursued

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Issues: Asset Protection – Turf/Track

Asset Protection Issues:

- **TJHS Stadium Turf and Track**
  - Recommend Install
    Turf – Summer 2013
    Track – Consult w/District on Schedule
  - Existing Sub-Base and Grading Appears to be Adequate – only Minor Repairs Required
  - Add New Drain Channel at "D" Areas
  - Install New Artificial Turf
  - Install New All-Weather Running Track
  - Budget: $698,000

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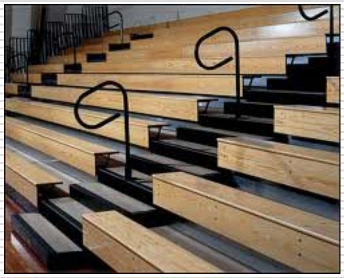
Issues: Asset Protection – Bleachers at TJHS

Asset Protection Issues:



- **New Bleachers at TJHS**
  - Recommend Install Summer 2013
  - Existing Bleachers are old and in Poor Condition
  - Many Issues with Existing Bleachers – Difficult to Repair and Maintain
  - Install New Bleachers that can be Relocated to a Potential New Building or Sold to Recoup Cost
  - Budget: $155,000

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Issues: Asset Protection – Gill Hall Parking

Asset Protection Issues:

- **Site Improvements (Parking and Site Circulation) at Gill Hall Elementary School**
  - Recommend Deferral to Later in Long Range Plan
  - Additional On-Site Parking
  - Improve Drop-off and Site Circulation
  - Budget: $378,000

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Issues: Asset Protection Costs

Cost for All Asset Protection Projects:

Category	Cost
Technology	$1,288,300
Roofing	$2,360,683
Air Conditioning/Mechanical	$3,450,000
Lighting/Energy/Electrical	$1,625,000
Stadium Turf & Track	$698,000
TJHS Gym Bleachers	$155,000
Gill Hall Site Improvements	$378,000
Total Budget Asset Protection:	$9,954,983

Notes:
1. This Work is spread over 10 years
2. PHMS Roof (Could Last Beyond 10 years)
3. This Work has been deferred in the past

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Issues: Growth Options

Current Enrollment/Capacity:

School	Current Enrollment	Classroom Ratio (Current)	Growth Potential
Gill Hall ES	282	23.5	12
Jefferson ES	564	22.5	48
McClellan ES	383	21.2	58
Subtotal Elem.	1,229	22.4	118
PHMS	668	N/A	88
TJHS	901	N/A	107
Total all Grades	2,798	N/A	313

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Issues: Growth Options

Options to Address Future Growth:

- All Buildings Currently Functioning within Available Capacity
- Proposed to Address "Potential" Future Growth
- Options are Presented to Coordinate with Overall Master Planning Process
- District does not have to decide today on an Option
- If No Growth occurs, then Present District Structure/Capacity Meets Needs for Future
- Evaluate Capacity/Redistricting on a Five Year Basis (Adopt Five Year Review as District Policy)

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Issues: Growth Options

Options to Address Future Growth:

Assumptions:

- Assumed a 10% Growth at Grades K-5 (Approximately 150 Students) – This would exceed current growth at nearly all Allegheny County School Districts.
- Middle School Can Accommodate Growth from Elementary Program (Approximately 75 Students)
- Any/All High School Options will be Designed to Accommodate Growth (Approximately 100 Students)
- Redistricting will be Required with Any/All Options

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Issues: Growth Options

Growth Option 1:

- Addition at Gill Hall ES
- Addition at Jefferson ES
- Redistrict Feeder Patterns for All Elementary Buildings

Pros:

- Less Redistricting Required Overall
- Jefferson and Gill Hall Have Site Area to Accommodate Additions
- Balance Capacity at All Buildings

Cons:

- Construction at Two Buildings Required
- Temporary Operational Disruption required at Two Buildings
- Costly Option
- McClellan would Experience Most Redistricting

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Issues: Growth Options

Growth Option 2:

- Large Addition at Jefferson ES
- Redistrict Feeder Patterns for All Elementary Buildings

Pros:

- Add Space to Building/Site Most Suitable to Additions
- Construction at only One Building less Costly than at Two Buildings
- No Redistricting Required for Jefferson Elementary

Cons:

- Jefferson Becomes Much Larger than Other Buildings – Different Experience
- Redistricting Upheaval is Significant at Gill Hall and McClellan

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Issues: Growth Options

Growth Option 3:

- Realign Grade Structure
- 5^{th} Grade Moves to PHMS
- Addition at PHMS
- Redistrict All Elementary Buildings

Pros:

- Construction at only One Building
- Local Precedent for 5-8 Middle Schools
- No Construction at Elementary Buildings
- Can be Combined with other Desirable Program Improvements at PHMS

Cons:

- Site is Tight and Challenging
- Grade Structure Change is an Educational Issue that would Require Study and Assessment

JC PIERCE llc

Issues: Growth Options

Growth Option 4:

- Realign Grade Structure
- 8^{th} Grades Moves to New TJHS
- 5^{th} Grade Moves to PHMS
- K-4 at Jefferson ES, Gill Hall ES and McClellan ES

Pros:

- No Construction Required to Implement
- Space Can be Available, and Planned for in Select High School Options
- More Opportunities Earlier for 5^{th} Grade and 8^{th} Grade Students
- 8^{th} Graders already Interact with 9-12 Students (Bussing, Sports, Activities, Etc)

Cons:

- Only works with one of the New High School Building Options

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Issues: TJ High School Modernization

Options to Modernize High School Facilities:

- Three Options Identified
  - Renovate Existing TJHS Building
  - Build new TJHS on Existing TJHS Site and Convert Old Building Site to Parking and other Site Amenities
  - Build New TJHS on Newly Acquired Property. Demolish Old Building and Build Parking and other Site Amenities

JC PIERCE llc

Issues: TJ High School Modernization

Options to Modernize High School Facilities:

Assumptions:

- TJHS Stadium and Field House Remains on Existing Site for the Immediate Future (Cost to Reconstruct: $7-10 million)
- Renovation Option to include as many Program Upgrades as possible to Provide Desired Educational Setting
- Existing TJHS Must Remain Operational throughout Construction

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Issues: TJ High School Modernization

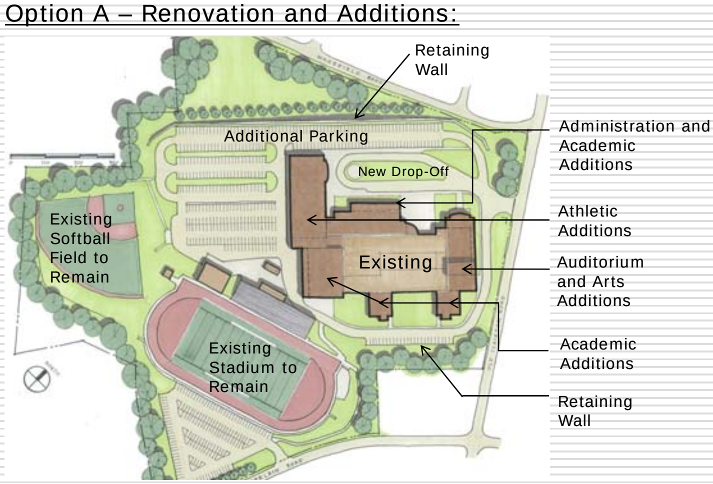
Option A - Renovation:

- Demolish and Reconstruct Auditorium, Main Gymnasium, and Add Food Court-Style Cafeteria
- Build New Natatorium
- Add and Update Classrooms
- Convert Library to Modern Media Center
- Renovate All Interior Finishes
- Replace HVAC, Lighting and Plumbing Systems
- New Roof/Windows/Doors (Building Envelope)
- Install Fire Suppression System
- Improve Site Circulation and Entrance
- Build Additional Retaining Walls

JC PIERCE llc

Issues: TJ High School Modernization

Option A – Renovation and Additions:



JC PIERCE llc

Issues: TJ High School Modernization

Option A - Renovation:

Estimated Project Cost:

Renovation (inc Demo/Abatement)	$30,277,506
New Construction	$23,147,204
Sitework	$3,000,000
Subtotal Hard Costs:	$56,424,710
Net Soft Costs	$3,598,409
Estimated Project Cost:	**$60,023,119**

JC PIERCE llc

Issues: TJ High School Modernization

Option A - Renovation:

Pros:

- Lower Initial Construction Cost
- No Property Acquisition Cost
- High School Remains on Same Site as Stadium/Field House
- Planning Approval Process May be Easier

Cons:

- Site Circulation Severely Compromised by Grading/Congestion
- Will Require Extensive Retaining Walls which are aesthetically unpleasing to the community environment
- Building Layout and Site Topography are Challenging
- 3-4 Years vs 2 Years Construction Period for a New School
- Severe Disruption to TJHS while Construction is in Progress
- Temporary Trailers/Facilities will be Required
- Storm Water Management is Very Challenging
- No Option to Increase Size to Accommodate Additional Grades

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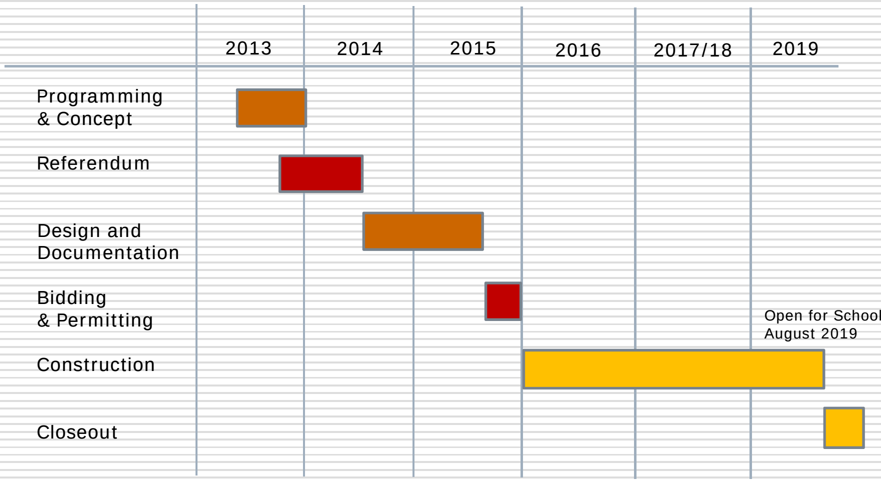
High School Timeline: Option A



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Issues: TJ High School Modernization

<u>Option B – New Building on Existing Site:</u>

- Construct New Building on Site, Below Existing Building, Parallel to Wakefield Drive
- Extensive Use of Retaining Walls Required
- LEED Silver High Performance Building (Lower Long-Term Cost of Ownership, More Environmentally Responsible, Increased State Reimbursement)
- Continue to Utilize Existing TJHS until complete
- Demolish Old TJHS and Develop Parking/Site Amenities on Site of Old Building

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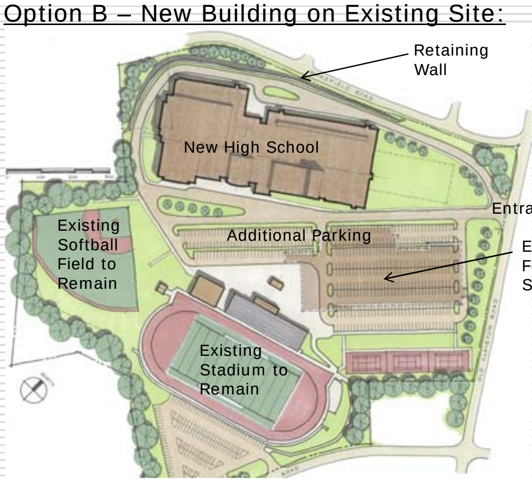
Issues: TJ High School Modernization

Option B – New Building on Existing Site:



Issues: TJ High School Modernization

Option B – New Building on Existing Site:

Cost:

■ Demolition	$2,403,402
■ New Construction	$59,626,619
■ Sitework	$6,000,000
Subtotal Hard Costs:	$68,030,022
■ Net Soft Costs	$4,412,353
Estimated Project Cost:	**$72,442,374**
Add District Administration:	$1,137,500
Estimated Cost w/Admin:	**$73,579,874**

Issues: TJ High School Modernization

Option B – New Building on Existing Site:

Pros:

- Provides Program Advantages of a New Building
- High School Remains on Same Site as Stadium/Field House

Cons:

- Extensive Retaining Walls Required
- Inordinately High Site Costs (for already developed site)
- Building Layout and Site Topography Compromised compared to New Building on New Site
- Premium Paid During Construction for Site Logistics
- Severe Disruption to TJHS while Construction is in Progress
- Temporary Parking will be Required
- Limited Site Amenities possible
- Limited Option to Increase Size to Accommodate Additional Grades
- Permitting Process May be More Difficult
- Storm Water Management is Very Challenging/Expensive

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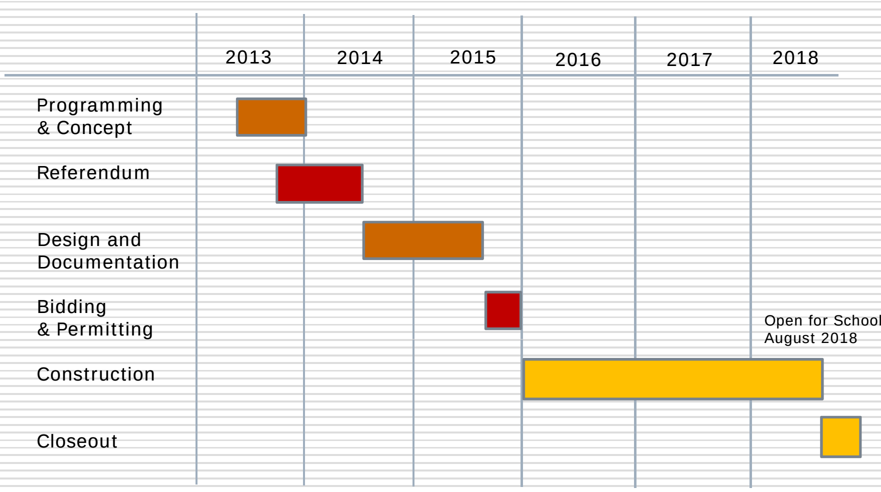
High School Timeline: Option B



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Issues: TJ High School Modernization

Option C – New Building on New Site:

- Construct New Building on Recently Acquired Property Across from Administration Building
- LEED Silver High Performance Building (Lower Long-Term Cost of Ownership (30-40% Utility Savings), More Environmentally Responsible, 10% More State Reimbursement)
- Geothermal HVAC System Possible
- Continue to Utilize Existing TJHS until complete
- Demolish Old TJHS and Develop Parking/Site Amenities on Site of Old Building

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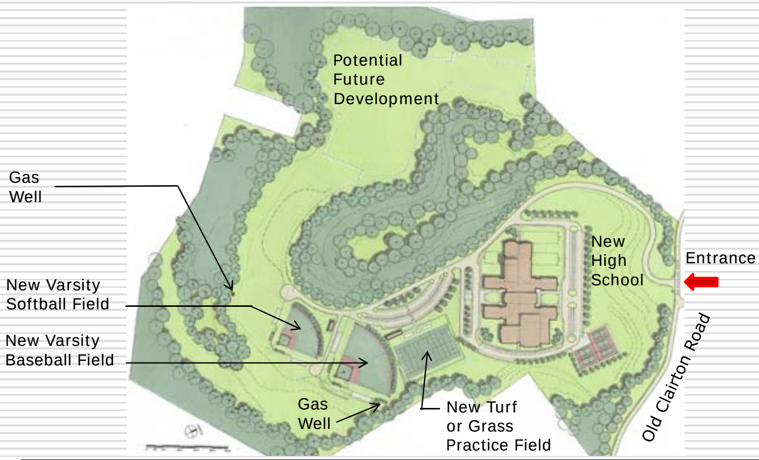
Issues: TJ High School Modernization

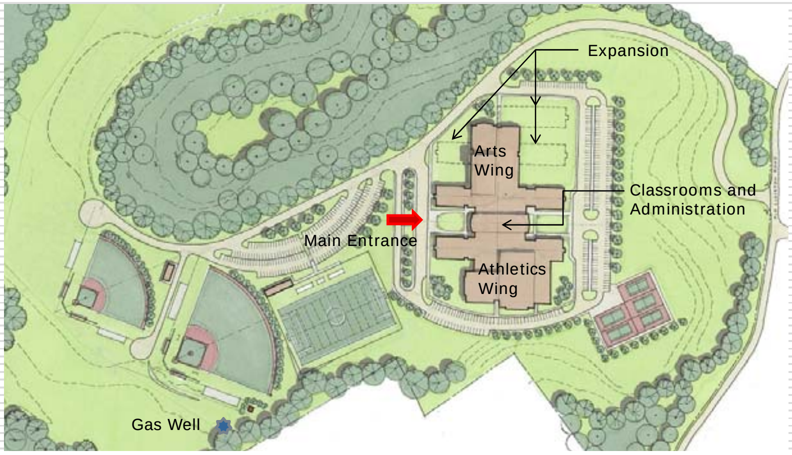
Option C – New Building on New Site:



JC PIERCE llc

Issues: TJ High School Modernization

Option C – New Building on New Site:



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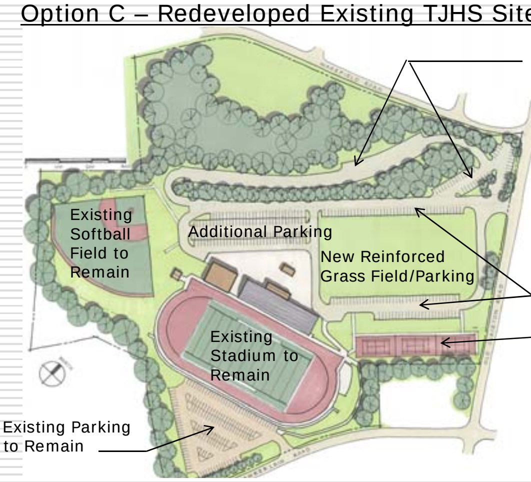
Issues: TJ High School Modernization

Option C – Redeveloped Existing TJHS Site:



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Issues: TJ High School Modernization

Option C – New Building on New Site:

Cost:

▪ Demolition/Site Development	$1,896,031
▪ New Construction	$56,509,081
▪ Sitework	$6,000,000
Subtotal Hard Costs:	$64,405,113
▪ Property Acquisition	$1,075,000
▪ Net Soft Costs	$4,073,916
Estimated Project Cost:	**$69,554,029**
Add District Administration:	$1,137,500
Estimated Cost w/Admin:	**$70,691,529**

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Issues: TJ High School Modernization

Option C – New Building on New Site:

Pros:

- Site is Large and Topography is Relatively Flat
- Ideal, Central Location for a New High School Site
- Building Layout can be Ideal - Not Compromised by Topography and/or the Existing TJHS Building
- No Retaining Walls Required
- No Disruption to Existing High School During Construction
- Storm Water Management without Large Scale Detention
- Site Area Allows for Site Amenities, Expansion, Other Development

Cons:

- High School No Longer on Same Site as Stadium/Field House (?)

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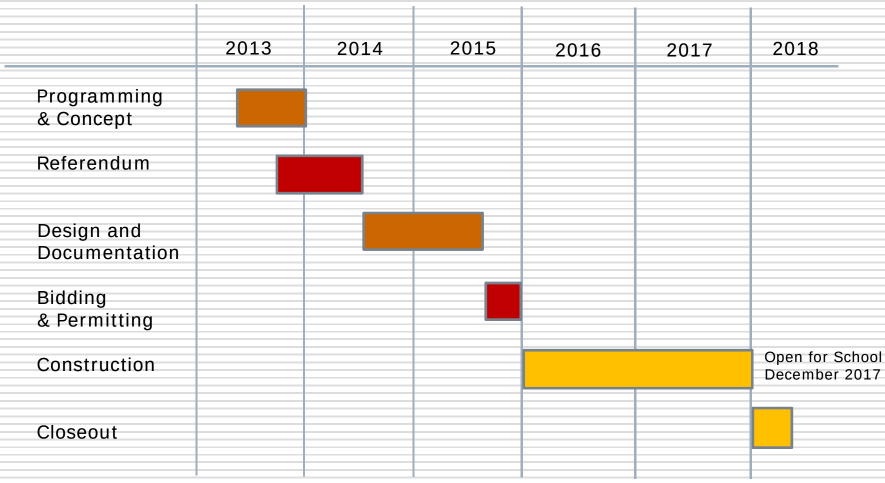
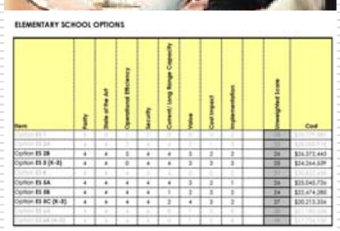
High School Timeline: Option C



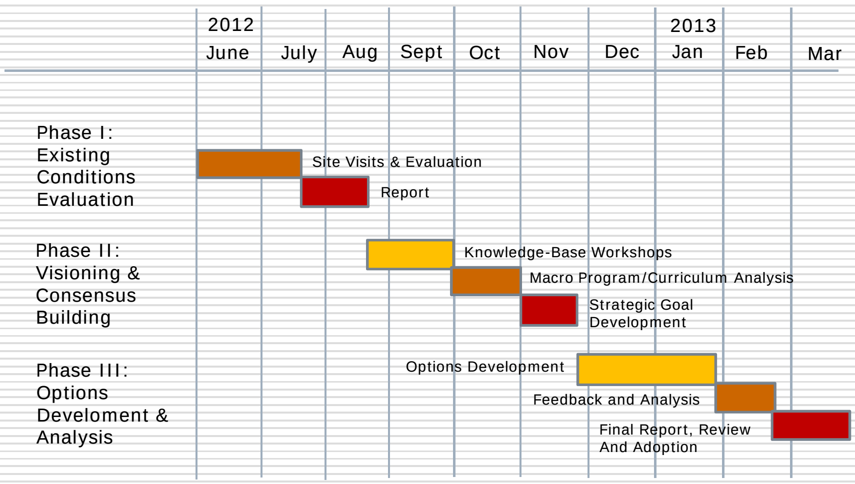
Next Steps: Options Presentation/Evaluation

Options Evaluation:

- Rank Options per Strategic Goals
- Select Preferred Option(s)
- Refine Preferred Option(s) and Adopt Strategic Facilities Plan
- Begin Implementation of Recommendations and Plan



Master Plan Study Timeline



West Jefferson Hills School District

District-wide Facilities Master Plan Study

Wrap Up

Questions and Discussion

February 4, 2013

West Jefferson Hills School District

District-wide Facilities Master Plan Study

Ranking of Options

to Address
Facilities Needs

Ryan M. Pierce, AIA
Principal-in-Charge
Lead Master Planner

March 19, 2013

Agenda

- Recap of Process
- Recap of Strategic Goals
- Recap of Growth Options
- Evaluation Matrix Growth Options
- Recap of High School Options
- Evaluation Matrix High School Options
- Next Steps
- Questions and Comments

Process: Evaluation of Options

- Applies Only to Growth Options and High School Modernization Options
  (Asset Protection Options are Not Rated)
- Evaluation was Conducted by Three Sub-Groups
  - Board of Directors
  - Administrators and Principals
  - Master Planner (Architects and Engineers)
- Options were Evaluated as to How Well They Met the **Strategic Goals**

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Recap: Strategic Goals

Strategic Goals:

- Curriculum Drives Facilities
- Modernize High School Facilities
- Address Long Term District Growth
- Derived from “Our” Unique Needs
- Implementation and Feasibility
- Operational Efficiency
- Fiscal Responsibility

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Recap: Growth Options

Growth Options:

- Option 1
  - Addition at Gill Hall ES; Addition at Jefferson ES; Redistrict Feeder Patterns for ALL Elementary Buildings
- Option 2
  - Large Addition at Jefferson ES; Redistrict Feeder Patterns for ALL Elementary Buildings
- Option 3
  - Realign Grade Structure: 5th Grade Moves to PHMS; Addition to PHMS; Redistrict Feeder Patterns for ALL Elementary Buildings
- Option 4
  - Realign Grade Structure: 8th Grade Moves to New TJHS; 5th Grade Moves to PHMS; K-4 at ALL Elementary Buildings

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Evaluation: Growth Options

Item	Curriculum Drives Facilities	Modernize High School Facilities	Address Long Term Growth	Derived from "Our" Needs	Implementation/ Feasibility	Operational Efficiency	Fiscal Responsibility		Unweighted Score	Cost
Option 1: (District)	2.9	0	2.9	2.5	1.5	2.7	1.7		14.2	N/A
Master Planners	3	0	3.8	3	2.6	2	1.8		16.2	
Addition at Gill Hall ES; Addition at Jefferson ES; Redistrict Feeder Patterns for All Elementary Buildings.										
Option 2: (District)	2.8	0	3	2.3	1.8	2.2	1.7		13.8	N/A
Master Planners	2	0	2	1	3.2	1	2.5		11.7	
Large Addition at Jefferson ES; Redistrict Feeder Patterns for All Elementary Buildings.										
Option 3: (District)	2.3	0	2.6	1.3	1.6	2	1.1		10.9	N/A
Master Planners	2.5	0	3	2.8	1.5	2.8	2		14.6	
Realign Grade Structure; 5th Grade Moves to PHMS; Addition at PHMS; Redistrict All Elementary Buildings.										
Option 4: (District)	2.3	2.9	3.2	1.9	2	3.3	2.6		18.2	N/A
Master Planners	2.5	3	3	3	4	4	3		22.5	
Realign Grade Structure; 8th Grade Moves to New TJHS; 5th Grade Moves to PHMS; K-4 at All Elementary Buildings.										

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Analysis: Growth Options

Growth Options:

- Option 4 is Clearly Preferred over All other Options
- Option 4 Scores Significantly Better in Operational Efficiency and Fiscal Responsibility – New HS Space is less expensive to build than Addition Space
- Option 4 Enhances the High School Program and makes a New High School More Efficient
- Options 1 & 2 are Viable - at least more viable than Option 3
- All Options are Contingent on Growth actually Occuring

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Recap: High School Modernization Options

High School Modernization Options:

- Option A – Renovation
- Option B – New Building on Existing High School Site
- Option C – New Building on Newly Acquired Site

Options A

Option B

Option C

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Evaluation: High School Options

Item	Curriculum Drives Facilities	Modernize High School Facilities	Address Long Term Growth	Derived from "Our" Needs	Implementation/ Feasibility	Operational Efficiency	Fiscal Responsibility		Unweighted Score	Cost
Option A: (District)	1.8	1.2	1	1	1	1	2.4		9.4	$63,623,119
Master Planners	2	2	1	1	0	1	1.4		8.4	
Additions and Alterations to the Existing TJHS: Does Not Include New District Admin: Construction - 48 Months.										
Option B: (District)	2.9	2.8	2.3	1.7	1.7	1.3	1		13.7	$77,579,874
Master Planners	3	4	1	2	1.8	3	0		14.8	
New HS Building on the Existing TJHS Site; New District Admin: Construction - 36 Months.										
Option C: (District)	3.8	4	3.8	3.6	3.8	3.8	3.3		26.1	$74,691,529
Master Planners	4	4	4	4	3	4	3		26	
New HS Building on the Newly Acquired Property ; New District Admin: Construction - 24 Months.										

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Analysis: High School Options

High School Options:

- Option C is Overwhelmingly Preferred over All other Options
- Option A is not considered viable due to Implementation and Efficiency Issues
- Option B is not considered viable since it costs more than Option C, and is uniformly less effective in meeting the Strategic Goals
- Weaknesses in Option C are the ability to fund the Debt service in an Act 1 Environment – which is reflected in less than perfect scores in Fiscal Responsibility and Implementation

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Next Steps: 10 Year Timeline/Final Report

Master Plan Study Activities:
- Board Resolution Identifying Preferred Option(s)
- Resolve 10-Year Timeline in Conjunction with Above Preferred Option(s)
- Complete Final Report
- Board Adopts Final Report
- Scheduled for Adoption April 2013

2013 Asset Protection Projects:
- Technology Upgrades at PHMS
- TJHS Stadium Turf & Track
- Gill Hall ES Roof Replacement

(Awaiting Board Approval)

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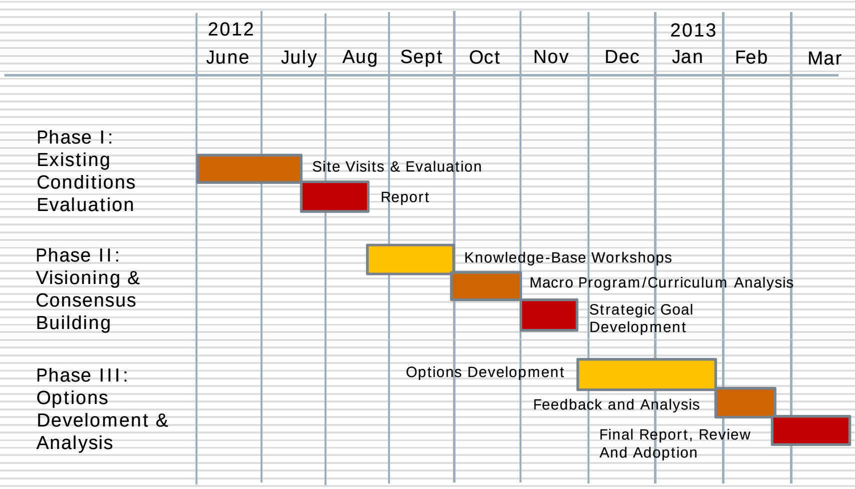
Master Plan Study Timeline



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West Jefferson Hills School District

District-wide Facilities Master Plan Study

Wrap Up

Questions and

Discussion

WJHSD

March 19, 2013

JC PIERCE

ELEMENTARY BUILDING CAPACITY

District/CTC: West Jefferson Hills School District | Project Name: Master Plan Study | Grades: K - 12

#1 NAME OF SPACE	#2 UNIT FTE CAP	SCHOOL: Gill Hall ES PRESENT #3 NUMBER OF UNITS	PRESENT #4 TOTAL FTE CAP	PLANNED #5 NUMBER OF UNITS	PLANNED #6 TOTAL FTE CAP	SCHOOL: McClellan ES PRESENT #3 NUMBER OF UNITS	PRESENT #4 TOTAL FTE CAP	PLANNED #5 NUMBER OF UNITS	PLANNED #6 TOTAL FTE CAP
HALF-TIME KINDRGRTN	50	1	50			1	50		
FULL-TIME KINDRGRTN	25								
REG CLSRM 660+ SQ FT	25	11	275			15	375		
OTHER: ____________									
BUILDING TOTAL	XX	XXXXXX	325	XXXXXX		XXXXXX	425	XXXXXX	

#1 NAME OF SPACE	#2 UNIT FTE CAP	SCHOOL: Jefferson ES PRESENT #3 NUMBER OF UNITS	PRESENT #4 TOTAL FTE CAP	PLANNED #5 NUMBER OF UNITS	PLANNED #6 TOTAL FTE CAP	SCHOOL: ________ PRESENT #3 NUMBER OF UNITS	PRESENT #4 TOTAL FTE CAP	PLANNED #5 NUMBER OF UNITS	PLANNED #6 TOTAL FTE CAP
HALF-TIME KINDRGRTN	50	2	100						
FULL-TIME KINDRGRTN	25								
REG CLSRM 660+ SQ FT	25	21	525						
OTHER: ____________									
BUILDING TOTAL	XX	XXXXXX	625	XXXXXX		XXXXXX		XXXXXX	

#1 NAME OF SPACE	#2 UNIT FTE CAP	SCHOOL: ________ PRESENT #3 NUMBER OF UNITS	PRESENT #4 TOTAL FTE CAP	PLANNED #5 NUMBER OF UNITS	PLANNED #6 TOTAL FTE CAP	SCHOOL: ________ PRESENT #3 NUMBER OF UNITS	PRESENT #4 TOTAL FTE CAP	PLANNED #5 NUMBER OF UNITS	PLANNED #6 TOTAL FTE CAP
HALF-TIME KINDRGRTN	50								
FULL-TIME KINDRGRTN	25								
REG CLSRM 660+ SQ FT	25								
OTHER: ____________									
BUILDING TOTAL	XX	XXXXXX		XXXXXX		XXXXXX		XXXXXX	

#1 NAME OF SPACE	#2 UNIT FTE CAP	SCHOOL: ________ PRESENT #3 NUMBER OF UNITS	PRESENT #4 TOTAL FTE CAP	PLANNED #5 NUMBER OF UNITS	PLANNED #6 TOTAL FTE CAP	SCHOOL: ________ PRESENT #3 NUMBER OF UNITS	PRESENT #4 TOTAL FTE CAP	PLANNED #5 NUMBER OF UNITS	PLANNED #6 TOTAL FTE CAP
HALF-TIME KINDRGRTN	50								
FULL-TIME KINDRGRTN	25								
REG CLSRM 660+ SQ FT	25								
OTHER: ____________									
BUILDING TOTAL	XX	XXXXXX		XXXXXX		XXXXXX		XXXXXX	

Only kindergarten and regular classrooms 660 square feet or greater should be reported. Although special education rooms and pre-school rooms may be eligible for capacity, these spaces should not be included in the room counts reported above. The following spaces do not receive reimbursable capacity and therefore should not be included in the capacities for an elementary school building: science labs, computer rooms, art rooms, music rooms, small and large group instruction rooms, and multi-purpose rooms.

MIDDLE/SECONDARY BUILDING CAPACITY

District/CTC: West Jefferson Hills School District | Project Name: Master Plan Study | Grades: K - 12

		SCHOOL: Pleasant Hills MS				SCHOOL: Thomas Jefferson HS			
		PRESENT		PLANNED		PRESENT		PLANNED	
#1	#2	#3	#4	#5	#6	#3	#4	#5	#6
NAME OF SPACE	UNIT FTE CAP	NUMBER OF UNITS	TOTAL FTE CAP	NUMBER OF UNITS	TOTAL FTE CAP	NUMBER OF UNITS	TOTAL FTE CAP	NUMBER OF UNITS	TOTAL FTE CAP
REG CLSRM 660+ SQ FT	25	24	600			27	675		
SCIENCE CLSRM 660+ SQ FT	25	3	75			4	100		
SCIENCE LAB 660+ SQ FT	20	3	60			4	80		
PLANETARIUM W/CLSRM 660+ SQ FT	20								
ALTERNATIVE ED ROOM 660+ SQ FT	20								
BUSINESS CLSRM 660+ SQ FT	25					2	50		
BUSINESS LAB 660+ SQ FT	20					2	40		
COMPUTER LAB 660+ SQ FT	20	4	80			6	120		
TV INSTRUCTIONAL STUDIO 660+ SQ FT	20					1	20		
ART CLASSROOM 660+ SQ FT	20	1	20			3	60		
MUSIC CLASSROOM 660+ SQ FT	25	1	25			1	25		
BAND ROOM 660+ SQ FT	25	1	25			1	25		
ORCHESTRA ROOM 660+ SQ FT	25								
CHORAL ROOM 660+ SQ FT	25					1	25		
FAMILY/CONSMR SCIENCE 660+ SQ FT	20	1	20			3	60		
IA/SHOP 1800+ SQ FT	20	1	20			2	40		
TECH ED 1800+ SQ FT	20	1	20			1	20		
VO AG SHOP W/CLSRM 660+ SQ FT	20								
DRIVER'S ED 660+ SQ FT	20								
GYM 6500-7500 SQ FT	66	1.0	66			1.0	66		
AUX GYM 2500 SQ FT	33					1	33		
OTHER:									
OTHER:									
BUILDING TOTAL	XXX	XXXXXX	1,011	XXXXXX		XXXXX	1,439	XXXXX	
MS/SEC UTILIZATION (BLDG TOTAL X .9)	XXX	XXXXXX	910	XXXXXX		XXXXX	1,295	XXXXX	

		SCHOOL:				SCHOOL:			
		PRESENT		PLANNED		PRESENT		PLANNED	
#1	#2	#3	#4	#5	#6	#3	#4	#5	#6
NAME OF SPACE	UNIT FTE CAP	NUMBER OF UNITS	TOTAL FTE CAP	NUMBER OF UNITS	TOTAL FTE CAP	NUMBER OF UNITS	TOTAL FTE CAP	NUMBER OF UNITS	TOTAL FTE CAP
REG CLSRM 660+ SQ FT	25								
SCIENCE CLSRM 660+ SQ FT	25								
SCIENCE LAB 660+ SQ FT	20								
PLANETARIUM W/CLSRM 660+ SQ FT	20								
ALTERNATIVE ED ROOM 660+ SQ FT	20								
BUSINESS CLSRM 660+ SQ FT	25								
BUSINESS LAB 660+ SQ FT	20								
COMPUTER LAB 660+ SQ FT	20								
TV INSTRUCTIONAL STUDIO 660+ SQ FT	20								
ART CLASSROOM 660+ SQ FT	20								
MUSIC CLASSROOM 660+ SQ FT	25								
BAND ROOM 660+ SQ FT	25								
ORCHESTRA ROOM 660+ SQ FT	25								
CHORAL ROOM 660+ SQ FT	25								
FAMILY/CONSMR SCIENCE 660+ SQ FT	20								
IA/SHOP 1800+ SQ FT	20								
TECH ED 1800+ SQ FT	20								
VO AG SHOP W/CLSRM 660+ SQ FT	20								
DRIVER'S ED 660+ SQ FT	20								
GYM 6500-7500 SQ FT	66								
AUX GYM 2500 SQ FT	33								
OTHER:									
OTHER:									
BUILDING TOTAL	XXX	XXXXXX		XXXXXX		XXXXX		XXXXX	
MS/SEC UTILIZATION (BLDG TOTAL X .9)	XXX	XXXXXX		XXXXXX		XXXXX		XXXXX	

SUMMARY OF OWNED BUILDINGS AND LAND

District/CTC: West Jefferson Hills School District

Project Name: Master Plan Study

Grades: K - 12

	PRESENT				PLANNED					
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11
NAME OF BUILDING OR SITE (INCLUDING DAO AND VACANT LAND) OWNED BY SCHOOL DISTRICT/CTC	CONSTRUCTION AND/OR RENOVATION DATES (BID OPENING DATES)	SITE SIZE (ACRES)	GRADE LEVELS	BUILDING FTE	CONVERSION / DISPOSITION AND PLANNED COMPLETION DATE BASED ON OPTION CHOSEN	SITE SIZE (ACRES)	GRADE LEVELS	PLANNED BUILDING FTE	PDE PROJECTED GRADE LEVEL ENROLLMENT 10 YEARS INTO THE FUTURE	FTE MINUS ENROLLMENT (#9 - #10)
Gill Hall Elementary School	New 1962 Add/Alt 2002	11.2	K-5	325	N/A	11.2	K-5	325	XXXXXXXX XXXXXXXX XXXXXXXX	XXXXXXXX XXXXXXXX XXXXXXXX
McClellan Elementary School	New 1957 Add 1960 Add/ Alt 2002	8.03	K-5	425	N/A	8.03	K-5	425	XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX	XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX
Jefferson Elementary School (Shared Property with DAO)	New 1993	90.7	K-5	625	N/A	90.7	K-5	625	XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX	XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX
Subtotal	XXXXXXXXX	XXX	XXXX	1,375	XXXXXXXXXXXXXXXXXXXXX	XXX	XXXX	1,375	1,321	54
Pleasant Hills Middle School	New 1965 Add/Alt 2006	10.2	6-8	910	N/A	10.2	6-8	910	XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX	XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX
Subtotal	XXXXXXXXX	XXX	XXXX	910	XXXXXXXXXXXXXXXXXXXXX	XXX	XXXX	910	676	234
Thomas Jefferson High School	New 1957 Add/Alt 1991	31.9	9-12	1,295	N/A	31.9	9-12	1,295	XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX	XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX
Subtotal	XXXXXXXXX	XXX	XXXX	1,295	XXXXXXXXXXXXXXXXXXXXX	XXX	XXXX	1,295	917	378
District Administration Office (Shared Property with Jefferson ES)	New 1974	90.7			N/A	90.7			XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX DESCRIPT BOARD REQUIRED	XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX XXXXXXXX ION OF ACTIONS BELOW
Subtotal	XXXXXXXXX	XXX	XXXX		XXXXXXXXXXXXXXXXXXXXX	XXX	XXXX			
TOTAL	XXXXXXXXX	XXX	XXXX	3,580	XXXXXXXXXXXXXXXXXXXXX	XXX	XXXX	3,580	2,914	666

ACTIONS TO BE TAKEN IN THE FUTURE IF PROJECTIONS COME TRUE
AND THE SCHOOL DISTRICT EXPERIENCES EXCESS OR INSUFFICIENT CAPACITY
(FTE MINUS PROJECTED ENROLLMENT (Col. 11) > + or - 300)

CHECK IF APPLICABLE:

X EXPAND PROGRAMS OR COURSE OFFERINGS

X PROVIDE SPACE FOR USE BY COMMUNITY GROUPS OR SERVICE AGENCIES

___ OFFER FULL-TIME KINDERGARTEN OR PRE-SCHOOL

X REDUCE CLASS SIZE

___ CLOSE SCHOOL(S)

___ OTHER (DESCRIBE): ___

LEARN MORE AT energystar.gov

ENERGY STAR® Statement of Energy Performance

17

ENERGY STAR® Score[1]

West Jefferson Hills SD, Gill Hall ES, 103029553

Primary Property Function: K-12 School
Gross Floor Area (ft²): 43,100
Built: 1962

For Year Ending: February 28, 2013
Date Generated: September 20, 2013

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address
West Jefferson Hills SD, Gill Hall ES, 103029553
829 Gill Hall Road
Jefferson Hills, Pennsylvania 15025

Property Owner
West Jefferson Hills School District
835 Old Clairton Road
Jefferson Hills, PA 15026
412-655-8450

Primary Contact
Peter Szymanski
360 Lincoln Avenue
Pittsburgh, PA 15202
412-307-0100
pszymanski@jc-pierce.com

Property ID: 3679217

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
113.8 kBtu/ft²

Annual Energy by Fuel

Electric - Grid (kBtu)	1,386,949 (28%)
Natural Gas (kBtu)	3,519,246 (72%)

Source EUI
186.8 kBtu/ft²

National Median Comparison

National Median Site EUI (kBtu/ft²)	83.6
National Median Source EUI (kBtu/ft²)	137.2
% Diff from National Median Source EUI	36%

Annual Emissions

Greenhouse Gas Emissions (MtCO2e/year)	469

Signature & Stamp of Verifying Professional

I PETER SZYMANSKI (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: ______________________ Date: 09.20.13

Licensed Professional

Peter Szymanski
360 Lincoln Avenue
Pittsburgh, PA 15202
412-307-0100
pszymanski@jc-pierce.com

REGISTERED ARCHITECT PENNSYLVANIA PETER FRANCIS SZYMANSKI RA016473

Professional Engineer Stamp
(if applicable)

ENERGY STAR® Statement of Energy Performance

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25

ENERGY STAR®
Score[1]

West Jefferson Hills SD, Jefferson ES, 103029553

Primary Property Function: K-12 School
Gross Floor Area (ft²): 79,881
Built: 1993

For Year Ending: January 31, 2013
Date Generated: September 20, 2013

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address
West Jefferson Hills SD, Jefferson ES, 103029553
875 Old Clairton Road
Jefferson Hills, Pennsylvania 15025

Property Owner
West Jefferson Hills School District
835 Old Clairton Road
Jefferson Hills, PA 15026
412-655-8450

Primary Contact
Peter Szymanski
360 Lincoln Avenue
Pittsburgh, PA 15202
412-307-0100
pszymanski@jc-pierce.com

Property ID: 3679328

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
80 kBtu/ft²

Annual Energy by Fuel

Natural Gas (kBtu)	3,463,438 (54%)
Electric - Grid (kBtu)	2,930,344 (46%)

Source EUI
160.7 kBtu/ft²

National Median Comparison

National Median Site EUI (kBtu/ft²)	64.2
National Median Source EUI (kBtu/ft²)	129
% Diff from National Median Source EUI	25%

Annual Emissions

Greenhouse Gas Emissions (MtCO2e/year)	N/A

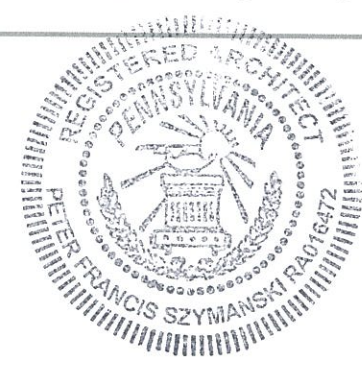
Signature & Stamp of Verifying Professional

I PETER SZYMANSKI (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: ____________ Date: 09.20.13

Licensed Professional

Peter Szymanski
360 Lincoln Avenue
Pittsburgh, PA 15202
412-307-0100
pszymanski@jc-pierce.com



Professional Engineer Stamp (if applicable)

LEARN MORE AT energystar.gov

ENERGY STAR® Statement of Energy Performance

West Jefferson Hills SD, McClellan ES, 103029553

20

ENERGY STAR® Score[1]

Primary Property Function: K-12 School
Gross Floor Area (ft²): 52,291
Built: 1957

For Year Ending: January 31, 2013
Date Generated: September 20, 2013

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address
West Jefferson Hills SD, McClellan ES, 103029553
360 School Lane
Pleasant Hills, Pennsylvania 15236-4193

Property Owner
West Jefferson Hills School District
835 Old Clairton Road
Jefferson Hills, PA 15026
412-655-8450

Primary Contact
Peter Szymanski
360 Lincoln Avenue
Pittsburgh, PA 15202
412-307-0100
pszymanski@jc-pierce.com

Property ID: 3679315

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
94.9 kBtu/ft²

Annual Energy by Fuel

Electric - Grid (kBtu)	1,796,464 (36%)
Natural Gas (kBtu)	3,166,644 (64%)

Source EUI
171.5 kBtu/ft²

National Median Comparison

National Median Site EUI (kBtu/ft²)	71.6
National Median Source EUI (kBtu/ft²)	129.4
% Diff from National Median Source EUI	33%

Annual Emissions

Greenhouse Gas Emissions (MtCO2e/year)	N/A

Signature & Stamp of Verifying Professional

I PETER SZYMANSKI (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: ______________ Date: 09.20.13

Licensed Professional

Peter Szymanski
360 Lincoln Avenue
Pittsburgh, PA 15202
412-307-0100
pszymanski@jc-pierce.com

Professional Engineer Stamp (if applicable)

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

West Jefferson Hills SD, Pleasant HIlls MS, 103029553

Primary Property Function: K-12 School
Gross Floor Area (ft²): 119,690
Built: 1965

For Year Ending: January 31, 2013
Date Generated: September 20, 2013

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address
West Jefferson Hills SD, Pleasant HIlls MS, 103029553
404 Old Clairton Road
Pleasant Hills, Pennsylvania 15236-4398

Property Owner
West Jefferson Hills School District
835 Old Clairton Road
Jefferson Hills, PA 15026
412-655-8450

Primary Contact
Peter Szymanski
360 Lincoln Avenue
Pittsburgh, PA 15202
412-307-0100
pszymanski@jc-pierce.com

Property ID: 3679331

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
60.8 kBtu/ft²

Source EUI
129.5 kBtu/ft²

Annual Energy by Fuel

Electric - Grid (kBtu)	3,756,476 (52%)
Natural Gas (kBtu)	3,524,307 (48%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	54.4
National Median Source EUI (kBtu/ft²)	115.9
% Diff from National Median Source EUI	12%

Annual Emissions

Greenhouse Gas Emissions (MtCO2e/year)	N/A

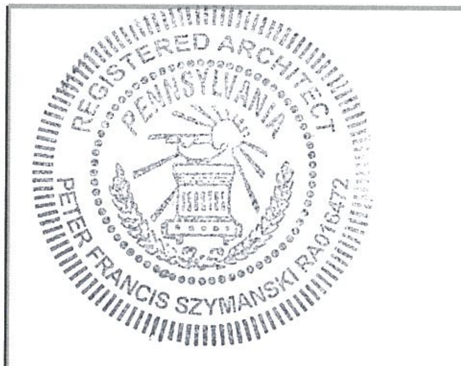
Signature & Stamp of Verifying Professional

I Peter Szymanski (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: ____________ Date: 09.20.13

Licensed Professional

Peter Szymanski
360 Lincoln Avenue
Pittsburgh, PA 15202
412-307-0100
pszymanski@jc-pierce.com



Professional Engineer Stamp (if applicable)

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ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

West Jefferson Hills SD, Thomas Jefferson HS, 103029553

Primary Property Function: K-12 School
Gross Floor Area (ft²): 179,833
Built: 1957

For Year Ending: January 31, 2013
Date Generated: September 20, 2013

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address
West Jefferson Hills SD, Thomas Jefferson HS, 103029553
310 Old Clairton Road
Jefferson Hills, Pennsylvania 15025

Property Owner
West Jefferson Hills School District
835 Old Clairton Road
Jefferson Hills, PA 15026
412-655-8450

Primary Contact
Peter Szymanski
360 Lincoln Avenue
Pittsburgh, PA 15202
412-307-0100
pszymanski@jc-pierce.com

Property ID: 3679333

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
82.9 kBtu/ft²

Source EUI
156.1 kBtu/ft²

Annual Energy by Fuel

Electric - Grid (kBtu)	5,938,364 (40%)
Natural Gas (kBtu)	8,970,087 (60%)

National Median Comparison

National Median Site EUI (kBtu/ft²)	75.7
National Median Source EUI (kBtu/ft²)	142.5
% Diff from National Median Source EUI	10%

Annual Emissions

Greenhouse Gas Emissions (MtCO2e/year)	N/A

Signature & Stamp of Verifying Professional

I PETER SZYMANSKI (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: ____________ Date: 09.20.13

Licensed Professional

Peter Szymanski
360 Lincoln Avenue
Pittsburgh, PA 15202
412-307-0100
pszymanski@jc-pierce.com

Professional Engineer Stamp (if applicable)

ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score[1]

West Jefferson Hills SD, DAO, 103029553

Primary Property Function: Office
Gross Floor Area (ft²): 7,720
Built: 1974

For Year Ending: January 31, 2013
Date Generated: September 20, 2013

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information

Property Address	Property Owner	Primary Contact
West Jefferson Hills SD, DAO, 103029553 835 Old Clairton Road Jefferson Hills, Pennsylvania 15025	West Jefferson Hills School District 835 Old Clairton Road Jefferson Hills, PA 15026 412-655-8450	Peter Szymanski 360 Lincoln Avenue Pittsburgh, PA 15202 412-307-0100 pszymanski@jc-pierce.com

Property ID: 3679340

Energy Consumption and Energy Use Intensity (EUI)

Site EUI
79 kBtu/ft²

Annual Energy by Fuel

Natural Gas (kBtu)	230,946 (38%)
Electric - Grid (kBtu)	379,200 (62%)

Source EUI
185.6 kBtu/ft²

National Median Comparison

National Median Site EUI (kBtu/ft²)	68.2
National Median Source EUI (kBtu/ft²)	160.2
% Diff from National Median Source EUI	16%

Annual Emissions

Greenhouse Gas Emissions (MtCO2e/year)	N/A

Signature & Stamp of Verifying Professional

I PETER SZYMANSKI (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: ______________________ Date: 09.20.13

Licensed Professional

Peter Szymanski
360 Lincoln Avenue
Pittsburgh, PA 15202
412-307-0100
pszymanski@jc-pierce.com

Professional Engineer Stamp (if applicable)

FACILITIES ANNUAL WATER PERFORMANCE

Water Performance
Date Generated: 09/20/2013 01:51 PM EDT
Number of properties in report: 6

Property Id	Property Name	Year Ending	City	State/Province	Postal Code	Property Floor Area (Building(s)) (ft²)	Water Use (kgal)
3679217	West Jefferson Hills SD, Gill Hall ES, 103029553	2/28/2013	Jefferson Hills	Pennsylvania	15025	43100	**494**
3679315	West Jefferson Hills SD, McClellan ES, 103029553	2/28/2013	Pleasant Hills	Pennsylvania	15236	52291	**361.3**
3679328	West Jefferson Hills SD, Jefferson ES, 103029553	2/28/2013	Jefferson Hills	Pennsylvania	15025	79881	**803.7**
3679331	West Jefferson Hills SD, Pleasant HIlls MS, 103029553	2/28/2013	Pleasant Hills	Pennsylvania	15236	119690	**637.2**
3679333	West Jefferson Hills SD, Thomas Jefferson HS,	2/28/2013	Jefferson Hills	Pennsylvania	15025	179833	**1170**
3679340	West Jefferson Hills SD, DAO, 103029553	2/28/2013	Jefferson Hills	Pennsylvania	15025	7720	**53.2**

Ryan M. Pierce, AIA

President & Chief Executive Officer

JC Pierce LLC
360 Lincoln Avenue, Pittsburgh, PA 15202

Project Role:
Principal-in-Charge

In his role as President and CEO, Mr. Pierce directs all design business development and operational activities of the firm. He also provides executive-level client and project management services to clients in K-12, Commercial, Higher Education, and Municipal market segments. Mr. Pierce is a registered architect in Pennsylvania and five other states, and has 24 years of broad experience in all facets of planning, design, project management, and project delivery for K-12 schools.

In his role as Principal-in-Charge, Mr. Pierce will lead the master planning/ pre-design phase of your project, utlilizing his proven Strategic Master Planning for Schools (SMPS). Through this process, Mr. Pierce will create a collaborative environment in which the firm will work with District stakeholders to develop a strategy to execute the project, as well as a road map for project implementation.

Mr. Pierce will attend all Board meetings, lead workshops and presentations, and serve as the primary point of contact for the Board and Senior District Administration. Mr. Pierce will negotiate all contracts and changes in scope, lead the team in educational planning and design, provide senior-level quality control on project deliverables, and resolve all issues and project challenges with contractors, CM's, and other project stakeholders throughout the life of the project.

Relevant Experience:

McKeesport Area School District
- New McKeesport Elementary/Intermediate School
- Francis McClure Elementary/Intermediate School - Additions and Renovations
- New Cornell Elementary/Intermediate School
- CM Advisory Services: New White Oak and McKeesport Elementary Schools
- McKeesport Tiger Stadium Renovations and Upgrades
- District-wide Master Plan Study

Forbes Road Career and Technology Center
- Roof Replacement at Building One

West Jefferson Hills School District
- District-wide Master Plan Study
- Roofing at McClellan Elementary School
- District-wide Technology Upgrades
- Gill Hall Elementary School - Additions and Renovations
- Roofing at Pleasant Hills Middle School
- Thomas Jefferson Stadium - Preliminary Planning*

Elizabeth Forward School District
- Entertainment Technology Academy at EFHS

Moon Area School District
- Construction Management Services - New Moon High School / Middle School

Pittsburgh Public Schools
- 2012 Construction Management Program
- 2007 On-Call Services Projects at Various Schools*
- 2003-2006 On-Call Services Projects at Various Schools*
- 'Right-Sizing' Renovations at Various Schools*
- Concord Elementary School Additions and Renovations*
- ADA-Vertical Circulation Improvements at Various Schools (Five Phases)*
- Perry Traditional Academy Additions and Renovations*

Bethel Park School District
- District-wide Master Plan Study*
- District-wide Asset Protection Projects (Five Schools)*
- Artificial Turf and Track at Bethel Park Stadium*
- Roof Replacement at Seven Schools*

RYAN M. PIERCE, AIA

JC PIERCE LLC
360 Lincoln Avenue, Pittsburgh, PA 15202

RELEVANT EXPERIENCE: (CONTINUED)

Archdiocese of Philadelphia
- New Pope John Paul II High School - Hilltown, PA*
- New High School for Upper Providence Township*

Yough School District
- District-wide Master Plan Study*

School District of Philadelphia
- New Samuel Fels High School*

Quaker Valley School District
- Site Master Plan Study*
- Middle School Master Plan Study*

Career and Technology Center of Licking County Ohio
- New Vo-Tech High School

Clairton City School District
- District-wide Master Plan Study*
- K-4 Elementary Education Center Relocation (Phase I)*

Bethlehem-Center Area School District
- Bethlehem-Center Elementary School Additions and Renovations*

Hempfield Area School District
- Harrold Middle School - Additions and Renovations*
- West Hempfield Middle School - Additions and Renovations*
- Maxwell Elementary School - Additions and Renovations*
- Fort Allen Elementary School - Additions and Renovations*
- West Hempfield Elementary School - Additions and Renovations*
- West Point Elementary School - Additions and Renovations*

Connellsville Area School District
- New Springfield Elementary School*
- Connellsville Jr. High East - Additions and Renovations*
- Connellsville Jr. High West - Additions and Renovations*
- Elevator Additions at Elementary Schools (Three Buildings)*

DeKalb County School System (Atlanta, Georgia)
- Cross Keys High School - Preliminary Master Planning*

Blairsville-Saltsburg School District
- CM Advisory Services: Saltsburg Middle/High School Add/Renovations
- Saltsburg Middle/High School Additions and Renovations*

*   Indicates Projects Completed Prior to Founding *JC* Pierce llc

EDUCATION:

Pennsylvania State University
- Bachelor of Architecture, 1988

University of Wisconsin at Madison
- Professional Education Workshop, 2002

Harvard University Design School
- Professional Education Program, 2003

REGISTRATIONS:

Registered Architect
- Pennsylvania, Ohio, New Jersey, Virginia, Delaware, and Georgia
- NCARB Certified

AFFILIATIONS:

American Institute of Architects
National School Boards Association (NSBA)
Pennsylvania School Boards Association (PSBA) - Service Associate Member
Council of Educational Facilities Planners International (CEFPI)
Pittsburgh Civic Light Opera Ambassador
National Trust for Historic Preservation
United States Golf Association
Former Candidate for School Director - West Jefferson Hills School District

PUBLICATIONS/AWARDS:

American School & University (AS&U), 2007
PSBA Bulletin, 2003, 2008
Exhibit Finalist NSBA Awards 2002: Connellsville Jr. High East - Connellsville Area SD*
NSBA Honor Citation 2004: Clearview Elementary School - Hanover Public SD*
Education Design Showcase Grand Prize 2007: Penn State Lorenzo Wrestling/Fitness Center*

Peter F. Szymanski, AIA, REFP

Senior Project Manager/LEED Manager

JC Pierce LLC
360 Lincoln Avenue, Pittsburgh, PA 15202

Project Role:
Project Architect

In his role as Senior Project Manager/LEED Manager, Mr. Szymanski leads, coordinates, and manages the daily activities of project teams. His duties include schematic design, development of project technical documents and solutions, quality control, and construction administration of projects in various market segments. Mr. Szymanski has nearly 15 years of diverse experience in planning, design, and project delivery of sports, educational, commercial, municipal, and health care projects for public and private clients. He is also an expert in the PA Department of Education PlanCon process for reimbursement of public school projects, and is a Recognized Educational Facility Planner (REFP).

With 10 years of experience in green design, Mr. Szymanski is a LEED Accredited professional who serves as the firm's LEED Manager. Having completed 13 LEED Certified projects ranging from Certified to Gold level, he is an expert at integrated design practices and sustainable planning.

In his role as Senior Project Manager, Mr. Szymanski will participate in the master planning/pre-design phase of your project, utlilizing the proven Strategic Master Planning for Schools (SMPS) process. He is an expert in the process, having lead and participated in the process while working with the Principal-in-Charge at this and previous firms. His activities will include conducting field analysis, compiling data, conducting interviews, supporting at workshops, developing options, and producing project documentation.

Relevant Experience:

McKeesport Area School District
- New McKeesport Elementary/Intermediate School
- Francis McClure Elementary/Intermediate School - Additions and Renovations
- New Cornell Elementary/Intermediate School
- District-wide Master Plan Study

Pittsburgh Public Schools
- 2012 Construction Management Program
- 2007 On-Call Services Projects at Various Schools*
- 2003-2006 On-Call Services Projects at Various Schools*
- 'Right-Sizing' Renovations at Various Schools*
- Concord Elementary School Additions and Renovations*
- ADA-Vertical Circulation Improvements at Various Schools (Five Phases)*
- Perry Traditional Academy Additions and Renovations*

Bethel Park School District
- District-wide Master Plan Study*
- District-wide Addition/Renovation Projects (Five Schools)*
- Artificial Turf and Track at Bethel Park Stadium*
- Roof Replacement at Seven Schools*

California Area School District
- District-wide Master Plan Study*
- Middle School/Elementary School - Additions and Renovations

Charleroi Area School District
- District-wide Master Plan Study*
- Middle School/High School - Additions and Renovations*
- District Administration Offices - Additions and Renovations*
- Middle School/High School Roof Replacement*
- District-wide Security System Feasibility Study*

Plum Borough School District
- District-wide Master Plan Study*
- Adlai Stevenson Elementary School - Additions and Renovations*
- Holiday Park Elementary School - Additions and Renovations*
- Pivik Elementary School - Feasibility Study*
- New Pivik Elementary School*
- Oblock Junior High School - Masonry and Roof Repair*
- High School Stadium Synthetic Turf Replacement*

RELEVANT EXPERIENCE: (CONTINUED)

Yough School District
- District-wide Master Plan Study*

Quaker Valley School District
- Site Master Plan Study*
- Middle School Master Plan Study*

Keystone Oaks School District
- District-wide Master Plan Study*
- High School Mechanical Upgrades*

Wilkinsburg Borough School District
- District-wide Master Plan Study*
- Relocation of Wilkinsburg Academy at teh High School*

West Jefferson Hills School District
- District-wide Master Plan Study
- Roofing at Pleasant Hills Middle School*
- Thomas Jefferson Stadium - New Football Stadium*
- Athletic Fields at Jefferson Elementary School*

LEED PROJECTS:

Projects on which Peter F. Szymanski acted as LEED Manager or Coordinator:
- Cornell Elementary/Intermediate School - Targeted LEED Gold
- McKeesport Elementary/Intermediate School - Targeted LEED Silver
- Penn State Fitness Center/Wrestling Building at Rec Hall - LEED Gold*
- Penn State Medlar Field (Baseball Stadium) - LEED Certified*
- CTEC Licking County Ohio - LEED Silver*
- PPS South Construction Technology Center - Targeted LEED Silver*
- Adlai Stevenson Elementary School - Targeted LEED Silver*
- Holiday Park Elementary School - Targeted LEED Silver*
- Pivik Elementary School - Targeted LEED Silver*
- Harrisburg Area Community College - LEED Gold*
- ALCOSAN New Operations and Maintenance Building - Targeted LEED Silver*
- Heinz History Center - LEED Certified*
- UPMC John G. Rangos Research Center - LEED Silver*
- UPMC New Childrens Hospital Clinical Services Building - LEED Silver*

* Indicates Projects Completed Prior to joining *JC* Pierce llc

EDUCATION:

Syracuse University
- Bachelor of Architecture, 1995

Harvard University Design School
- Professional Education Program, 2006

Pennsylvania State University
- Project Management Fundamentals, 2007

REGISTRATIONS:

Registered Architect
- Pennsylvania
- NCARB Certified
- LEED Accredited Professional BD+C (LEED AP 2.0)
- REFP - Council of Educational Facility Planners International

AFFILIATIONS:

American Institute of Architects
Project Managment Institute (PMI)
Construction Specifications Institute (CSI)
National School Boards Association (NSBA)
Pennsylvania School Boards Association (PSBA) - Service Associate Member
Council of Educational Facilities Planners International (CEFPI)
Community Design Center of Pittsburgh

PUBLICATIONS/AWARDS:

ED+C (Environmental Design+Construction Magazine) - September 2009
''5 Steps to Achieve Higher LEED Certification: Use Integrated Design to Further Your LEED Goals''*
Education Design Showcase Grand Prize 2007: Penn State Lorenzo Wrestling/Fitness Center*