Space to Grow: Greening Chicago Public Schoolyards

Virgil I. Grissom Elementary School

Master Plan Spring 2013
Virgil I. Grissom Elementary School

Master Plan
for Elementary School Campus Improvements

Prepared for: Chicago Public Schools
125 South Clark Street
Chicago, Illinois 60603

Approved: _____________________________, ________
Openlands

Approved: _____________________________, ________
Healthy Schools Campaign

Approved: _____________________________, ________
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Spring 2013
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Virgil I. Grissom Elementary School

Project Introduction

The Challenge

Studies show that a well-planned and equipped exterior play area enhances the learning environment resulting in improved learning and achievement. Such play areas provide physical and mental challenges that translate to improved health and cognitive abilities. One of the principle goals of schools is to provide a focus for the community - a place to gather and to meet, a place to enjoy, a place that enhances the community’s appearance.

Chicago Public Schools (CPS), as with many urban school districts, is the second largest landowner in the city. The district has 400,000 students housed in 681 buildings. The district is faced with under utilized resources coupled with financial issues while striving to improve the quality of K-12 education. With the implementation of the Full School Day which started last fall, CPS brought back recess. The 2013 draft capital budget proposes a multi-year investment to ensure that schools have new or improved playlots. The playgrounds compliment recess and the newly proposed full day Kindergarten. CPS is also in the process of consolidating its resources in order to better serve its students.

“Every child in every neighborhood in Chicago deserves access to a high quality education that prepares them to succeed in life. For too long, however, children in certain parts of Chicago have been cheated out of the resources they need to succeed in the classroom because they are in under utilized, under-resourced schools. By consolidating these schools, we can focus on safely getting every child into a better performing school close to their home.” – Barbara Byrd Bennett

City Infrastructure

Chicago built a stormwater conveyance system in 1856 to control runoff and reduce flooding. Like most cities in this era, Chicago built one underground system that combines both wastewater and storm water. However, as the city has grown, more and more hard surfaces, such as rooftops and roadways exist resulting in increased levels of runoff particularly during floods. The city infrastructure has not kept up with urbanization and when storm water volumes exceed the system’s capacity the combined sewers overflow and release untreated waste and storm water into the Chicago River. This practice harms the health and habitat of the river. As the Metropolitan Water Reclamation District of Greater Chicago (MWRD) begins efforts to reduce storm water, greening schoolyards is an excellent opportunity to develop a larger innovative schoolyard model that supports the use of schoolyards as effective community and recreation resources by designing and implementing effective play and learning spaces critical to addressing child and community health.
Space to Grow: Greening Chicago Schoolyards is a three-year campaign with a long term goal to transform Chicago schoolyards into safe and sustainable places that support student health and wellness, address the city’s green infrastructure needs, engage the broader community, and support play, learning, physical activity, interaction with nature and environmental awareness. Openlands and Healthy Schools Campaign, in partnership with Chicago Public Schools and others will develop a sustainable schoolyard planning, financing and construction model that leverages funding from a variety of public and private sources including green infrastructure dollars.

A sustainable schoolyard is a safe and sustainable center for community life where children can play, learn and interact with nature, as well as a physical space that addresses the city’s green infrastructure needs. While each schoolyard will be designed to meet the needs of the specific school and community, elements will likely include gathering spaces (big and small); a community gateway; multi-purpose fields; hard surfaces for games and educational elements; a natural habitat; an edible garden; and, public art.

This school-community design model will be developed out of sustainable schoolyard pilots in three Chicago schools. This work will be done through a master planning approach that involves students, parents, teachers and the broader community in developing a comprehensive plan for the schoolyard. This report was part of a University of Colorado, Department of Landscape Architecture design studio conducted over an eight-week period in the Spring of 2013. This studio was funded in part by Openlands.

The master plan is a written report and set of schematic drawings set forth the structure for future campus improvements. Each school has a vision that speaks to the desires of the school and surrounding community. The vision is further delineated into goals that identify the major components for implementation. These goals are defined through the use of text and imagery. A programmatic list of uses is also developed. Lastly, each master plan sets forth the aesthetic ordering system or systems that will be used in the design phase to organize programmatic uses. As a pilot project this report is a hybrid of both master plan and a set of schematic design drawings which will provide a framework for fund raising and future construction.
Part 1: Assessing the Present Situation

Hegewisch Neighborhood

Community Demographics
- Total Population: 12,927
- Percentage of Children 1-14: 20%
- Most of Population Born in State: 70%
- Nationality: Polish, Italian, German, Hispanic
- Demographic: White 56%, Hispanic 39%, Black 23%

History
The community is named for Adolph Hegewisch, the president of U.S. Rolling Stock Company who hoped to establish “an ideal workingman’s community” when he laid out the town along a rail line in 1883. In 1889, Hegewisch was annexed by the City of Chicago. At the time it was still just a few homes, and the USRS Co. Population was primarily immigrants from Poland, Sweden, Croatia, Serbia, Czech Republic, Slovakia, and Ireland. By the 1920’s approximately 7,900 people lived in Hegewisch, of which most immigrants are Polish.

By the late 1950’s the population started to skyrocket and continued that way through the 1980’s. The 1990’s came and so did the death of the steel plants, the population dropped but Hegewisch still survived. Hegewisch is made up of three distinct areas within the Neighborhood: Arizona, Avalon Trail, and Old Hegewisch. Old Hegewisch, the oldest part of Hegewisch, is the area north of 138th St., south of 130th St., east of Torrence Ave., and west of Avenue O. It contains the Main St. Area of Hegewisch. Arizona commonly referred to as the “Avenues” is the area east of Avenue O and north of 138th St. Avalon Trails is the area north of 130th St., south of the railroad tracks and east of Torrence Ave. It is the youngest part of Hegewisch, and is built on a wetland area where the original settlers of Hegewisch hunted small game and fished.

-- Reference: http://www.hegewisch.net
Hegewisch Neighborhood Maps

- Map of Ward 10 from City of Chicago
- Hegewisch is Part of Ward 10
- 10 out of 50 Wards of Chicago
- Alderman John Pope
- Hegewisch is one of 77 Community Areas of Chicago
- Part of Far South District
Virgil I. Grissom Elementary School

Part 1
Assessing the Present Situation

School Demographics & Statistics
As of 2012-2013, the largest demographic at GRISSOM was Hispanic. As of that time, this demographic made up 69.3% of the student population. The second greatest demographic was White at 24.3%. Also, it is 5.5% Black & .6% Native American.

As of 2012-2013, there were 329 students enrolled at Grissom and 66.3% were low income students who qualify for free or reduced lunch. There were 9.7% Special Education Students and 18.2% were Limited English Learners.

- Uniforms: Yes worn everyday and at Gym
- ISAT Scores: Overall Performance: Above Average – More than other CPS Schools.
- Reading – 96.9% - Above average for 2010 Subject Performance
- Math – 88.1% - Above average for 2010 Subject Performance
- Science – 85.5% - Above average for 2010 Subject Performance

School History
The Virgil I. Grissom Elementary School was built in 1970 to service the children of the community of Hegewisch on the far southside of Chicago. Grissom School was named after Air Force Lieutenant Colonel Virgil I. “Gus” Grissom who was the second United States’ astronaut in space. Colonel Grissom was the first astronaut to make two space flights, the first being Liberty Bell 7 and the second, Project Gemini.

School Mission
The mission of Virgil I. Grissom School is that “All Grissom students will learn, achieve and progress.” The school wishes that the school team will provide all children with the opportunity for quality educational development, enrichment and the mastery of grade level skills in all subject areas.

Grissom School has a membership of about 320 students in Pre-Kindergarten through Eighth grade. It is a Fine and Performing Arts School. In 2002 Grissom was named a “School of Distinction” by the Chicago Public Schools and was selected to take part in the Professional Development CPS Teachers Academy S.T.A.R.S.

Special School Programs
Grissom Elementary School offers a Fine and Performing Arts Magnet Program. Teachers and the city’s art institutions work together to make art an important part of the core curriculum. Grissom School has partnerships with Art Resources in Teaching (A.R.T.), International Music Foundation, Field Museum, and Art Institute. Grissom is named a School of Distinction. The after school chess program includes:

- Grades K-8
- Through organization called Chess Scholars
- Thursdays from 2:45 to 3:45
- Does cost some money—$20 per child, and the school will pay an additional $40 per student to cover the total cost.
- They encourage all students to participate because chess is an excellent way to develop thinking skills.

Expect the Best after school program includes homework help, reading and discussion of interesting books, and challenging math problems outside of regular class assignments. Participating students can get extra credit in reading, language arts and math classes.
**Existing School Surfaces**

<table>
<thead>
<tr>
<th>Surface</th>
<th>Total Area</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Asphalt</td>
<td>130,815 sq. ft.</td>
<td>68%</td>
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<tr>
<td>Turf</td>
<td>26,000 sq. ft.</td>
<td>14%</td>
</tr>
<tr>
<td>Buildings</td>
<td>20,915 sq. ft.</td>
<td>11%</td>
</tr>
<tr>
<td>Sidewalk</td>
<td>12,750 sq. ft.</td>
<td>7%</td>
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**Existing Parking and Pedestrian Access**

Parking: Enclosed, 35+ Parking Spaces, Oversized for Utilization.

Pedestrian Access: Cross Walks at every street junction, School Surrounded by Sidewalks, Currently 3 Entrances to Playground Space.

Part 1
Assessing the Present Situation

Needs and Desires

Photo Survey

Students, teachers, and staff were surveyed to assess what their interests for the playground and were asked to imagine their ideal playground. Next, they were given 19 images related to the design of playgrounds from which they chose their top 5 elements to have incorporated in to the Grissom playground design. While the survey was being completed, there were discussions of each picture about what they like, do not like, and why. The photo survey provides a way to involve all stakeholders in the design process. This way stakeholders can cast their votes on the survey. Below are the top five elements most preferred. After tallying the results Wordle/Word Cloud were created for each group. The larger the lettering the more votes it received.
Stormwater Systems

Implementing best management practices (BMPs) at Morrill can help protect Chicago’s lakes, streams and groundwater from storm water-related pollution. BMPs to be included in the design proposal are porous concrete, rain gardens, an underground detention basin, and other subjects like trees & engineered wood fiber. According to our calculations, stormwater runoff will be significantly reduced, as will the impermeable area of the site. The quality of water leaving the site will improve with extensive filtering opportunities through the permeable materials and mediums. Calculations and documentation were done as per the agreement with the IEPA for the Illinois Green Infrastructure Grant. (see Appendix for additional information)

**Givens**

- It rains approximately 27.1 inches per year in the Chicagoland area. This project disturbs 152,136 sf of surface area.
- 100-year storm, 1-hour duration (3 in/hr).
- Type A hydrograph (duration = time of concentration).
- The pavement acreage includes only onsite drainage.
- We are capturing 69,462 sq ft of collection area (26,000 of that can be permeable concrete instead of asphalt)
- Our peak rate of runoff is 5.681 cubic feet per second at a precipitation factor of 3 inches per hr
- This equates into 20,452 cubic ft per hr

**Calculations**

Modified Rational Method - \( Q_p = C \times Ca \times I \times A \), where:
- \( Q_p \) = peak rate of runoff
- \( C \) = runoff coefficient (pavement = .95 & grass = .30)
- \( Ca \) = antecedent precipitation factor (1.25)
- \( I \) = rainfall intensity - 3 in/hr
- \( A \) = Area in acres (pavement = 2.93 & grass = .20)

\[ Q_p = 5.68 \text{ ft}^3 / \text{s} \]

Volume = \( \text{ft}^3 / \text{s} \times \text{seconds} = \text{ft}^3 \)

Site volume = 20,450 ft³/hr

City of Chicago required release rate = .30 ft³/sec/acre or 1080 ft³
Part 1

Assessing the Present Situation

Stakeholder Workshops

On Thursday April 12th, an all day community workshop was set up by Openlands to solicit stakeholder input for the work that the CU graduates had prepared to date. Students prepared three boards of their work to date (see appendix for boards). The schedule was as follows:

- 7:30 Lois Brink and Tori, Greg, Amber and Andrew arrive at Grissom to set up
- 8:15 AM—Meet with the teacher and staff team.
- 9:30 AM—Meet with the parents/community members.
- 10:30 AM—Meet with the students.
- 11:30-2:45—Table display for additional feedback.
- (Lunch to go)
- 2:45-3:30 PM—Open invitation for additional feedback from parents, community members, staff, and students
- 3:30 – 4:30 Exit interview with principal.

Due to the number of parents and community members who arrived (over 40) two subgroups were created to stimulate conversation, interaction and the sharing of ideas. Stakeholders were given dots and sticky note pads to share ideas and identify elements they liked and disliked. Blue dots represent elements they do not like and yellow green dots are elements they like.
Part 2: The Master Plan: Creating the Future

Introduction

There are five components to this master plan that are intimately intertwined in the development of the playground:

The Vision and Goals;
The List of Programmatic Elements;
The Spatial Concept;
The Organizational Concept;
The Illustrative Plan;

The “vision and goals” speak directly to the needs and desires of the school and surrounding community for their new schoolyard. The “vision” briefly states what the design intent of the schoolyard is. The “goals” outline how the vision is executed and the way that it will feel and what will happen there.

The list of possible elements quantifies the physical things and spaces that make-up the schoolyard site. The “spatial concepts” diagrammatically describes how the programmatic elements spatially relate to one another and to the surrounding context.

The “organizational concept” sets up a method for organizing the programmatic elements on site. Like the spatial concept, it is also diagrammatic in nature. Finally, the illustrative plan depicts the outcome within the defined framework offered by the spatial and organizational concepts.

Together, these five components become the driving force for the actual design of the playground. Since these components are derived from the initial research and analysis, they strongly address the needs and concerns of the school and surrounding community. And, as such, they are the seeds and the soil from which a fruitful, thoughtful design grows.

Next Steps

With the completion of the stakeholder workshops CU students began to refine the components of the master plan. The first stage was to address the three spatial concepts and merge them into one final diagram.

CURRICULUM ASPECTS: What else should be added?

- Fine and Performing Arts Emphasis
- Math, Science and Reading
- Urban Agriculture / Earth Science
- Space Exploration

GARDEN SCIENCE

SPACE!

ART!
Concept Diagrams

The Bubble Diagrams are spacial explorations to organize all the play elements. The following bubble diagrams were reviewed by the school and through the responses from the group, we were able to come to our final master plan. All plans included a new modular classrooms.

Diagram 1: Community

- Revised parking area to be more efficient.
- Learning gardens and swales provide buffer for ECE area.
- Large community space provides a place for the whole neighborhood to enjoy!
- The turf field all the kids want!
- Habitat areas provide shade, natural vegetation and learning opportunities.
- Multiple shared hardscape areas encourages interaction between age groups.
- Outdoor classrooms provide shade and a more dynamic learning environment!
- The stakeholder really liked the community space idea of this diagram.
Part 2

The Master Plan: Creating the Future

Diagram 2: Urban Farm

- Revised parking area to be more efficient
- Modulars are set up to frame and enclose ECE area to create a more engaging space
- By locating outdoor classrooms near the turf, it can double as seating to watch sporting events!
- Urban agriculture, which can be maintained by CPS Food Nutrition Services, can raise funding to maintain the schoolyard and provide healthy food to CPS schools!
- The obstacle course is an interactive way to stay in shape and learn with friends!
- Grissom farm provides learning opportunities about farming and how things grow!

During stakeholder meetings the idea of reshaping the parking and parking entrance was well received by everyone. By the end of the day all groups, including the principal liked the urban agriculture idea of this diagram particularly due to the size of Grissom's schoolyard.

Diagram 3: The Nebula

- Learning Gardens and swales provide buffer for ECE area
- Outdoor classroom = Outdoor learning
- Modular locations are closer to the building and frame the ECE area to provide a quiet, special space
- Community space provides a place for the whole neighborhood
- The turf field that all of the kids want!
- Urban agriculture, which can be maintained by CPS Food Nutrition Services, can raise funding to maintain the schoolyard and provide healthy food to CPS schools!

+ Group likes the ECE organization idea of this diagram the most
+ Group really liked the location of the play areas and shared hard surface idea of this diagram
WEATHER: RAIN

Chicago Precipitation
On average, Chicago is one of the cooler cities in the United States and receives more rain and snow than a typical American city.

36" - average annual snowfall in Chicago.
36.3" - average annual rainfall in Chicago.
68.7" - snowiest year in Chicago history was 1978-1979 with 68.7 inches of snow.
5.9" - least snowiest year in Chicago history was 1920-1921 with 5.9 inches of snow.

EDUCATIONAL OPPORTUNITIES

HYGROMETER - Soil Moisture

WEATHER: SOLAR ENERGY

Temperature Records and Yearly Averages
Chicago receives 54% of all possible sunshine on a yearly basis.

Chicago receives on average 84 days full sun, 106 days partial sun, and 31 days with sun 10%.
The average annual temperature for Chicago is 49.1 degrees.
The average annual daily high is 58.3 degrees.
The average annual daily low is 39.5 degrees.

EDUCATIONAL OPPORTUNITIES

AMBIENT TEMPERATURE
LVA/LVB RADIATION

GROUND TEMPERATURE
Virgil I. Grissom Elementary School

Part 2
The Master Plan: Creating the Future

Organizational Systems

Curriculum Aspects
- Fine and Performing Arts Emphasis
- Math, Science and Reading
- Urban Agriculture / Earth Science
- Space Exploration

Ordering System
Space is a vast and mysterious. Since Grissom Elementary was named after the 2nd man in space, Virgil I Grissom, having the solar system’s orbit or the spindrel of the galaxy shape the space of the playground seems right. We can also use these ideas as a learning tool. For example math: distance references from Sun to each planet. Science: planet references and matching games. Art: space themed murals and outdoor classrooms for art Outside.

Smart Tools
Water monitoring systems for gardens where lights in garden change color when need to be watered. A circuit track where kids can keep track of there fitness on the circuit. Other Ideas: Light Up Human Size Chess, Solar System Reaction, Wind Flutes, Lazer Harp. (See appendix for additional tools)

List of Possible Elements
- Gateway
- Traditional Play Equipment, Swings
- Hard Surface Play: “Hardscape”
  - Four Square
  - Tether ball
  - Hopscotch
  - Basketball: Half Court
  - Volleyball
- Walking/Track
- Challenge Course / Obstacle Course
- Educational elements – maps, memory match, etc.
- Soft Surface Play
  - Grassy playing field
  - Artificial Turf
- Gathering Areas/Gardens
  - Learning Gardens
  - Urban agriculture
  - Habitat/native plantings
- Outdoor classroom
  - Stage, amphitheater
  - Shade pavilion
- Art Features
  - Mural
  - Sculpture
Modular Unit Options
Part 2

The Master Plan: Creating the Future

Final Schematic Design

- Revised parking area.
- Learning Gardens and swales provide buffer for ECE area.
- Outdoor classroom = Outdoor learning.
- Modular locations are closer to the building and frame the ECE area to provide a quiet, special space.
- Community space provides a place for the whole neighborhood.

- The turf field that all of the kids want!
- The circuit course is an interactive way to stay in shape and learn with friends!
- Urban agriculture, which can be maintained by CPS Food Nutrition Services, can raise funding to maintain the schoolyard and provide healthy food to CPS schools!
Part 2
The Master Plan: Creating the Future

Gateway

ECE Shade Structures
Primary Shade Structures

Gateway

Community Space & Shade Structure
Appendix

Part 3: Appendix

• Parent/Student Photo Survey Results
• Stakeholder Presentation Boards
• Design Development Documents
Appendix
GRISOM SURFACE: PERVIOUS SURFACE IMPERVIOUS SURFACE

BUILDING FOOTPRINT

S Escanaba Ave

S Muskegon Ave
Vision Statement: What do you think?

Our mission is to foster community pride and joy by celebrating the school’s history and accomplishments. To provide a healthy, safe, and inspiring landscape that supports Grissom’s curriculum and arts program. Launching diverse recreational activities that incorporate space, art, and innovation.

Goals: What can we add?

- Support curriculum
- Support art program
- Celebrate history of school and neighborhood

Existing Site Map: What did we miss?

Supporting Material:

“A would like to see a garden in the plan. Somewhere the kids can experience gardening and learn about nature. A few boulders for people to rest on and enjoy the garden area.” – Teacher

Student Drawings:

Hegewisch Timeline:

25
ORGANIZATIONAL CONCEPTS: What do you think?
Space is a vast and mysterious. Since Grissom Elementary was named after the 2nd man in space, Virgil I. Grissom, having the Solar System's Orbit or the spindrel of the Galaxy shape the space of the playground seems right. We can also use these ideas as a learning tool. For example: Math: Distance References from Sun to Each Planet; Science: Planet References and Matching Games; Art: Space Themed Murals and Outdoor Classrooms for Art Outside...

SMART TOOLS: Ideas?
Water Monitoring System for Gardens where lights in garden change color when need to be watered. A Circuit Track where kids can keep track of their fitness on the Circuit. Other Ideas: Light up Human Size Chess, Solar System Reaction, Wind Flutes, Lazer Harp.

Spatial Diagram #3: The Nebula

Possible Stormwater Storage:

Playground Inspiration: What are your ideas?
Appendix

DESIGN DEVELOPMENT DOCUMENTS

VIRGIL GRISOM ELEMENTARY SCHOOL

FUNDED BY OPENLANDS

ISSUE DATE: MAY 16, 2013

PROJECT ADDRESS:
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SHEET INDEX:
G1 COVER SHEET
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S2 DEMOLITION PLAN
S3 SITE PLAN
S4 HORIZONTAL SURFACE PLAN
S5 GRADING PLAN
S6 STORMWATER PLAN
S7 LANDSCAPE PLAN
E1 ACTIVE PLAY AREA ENLARGEMENT
E2 E.C.E. ‘NEBULA’ AREA ENLARGEMENT
E3 SOLAR PLAZA ENLARGEMENT
E4 LANDSCAPE ENLARGEMENTS
D1 SURFACE DETAILS
D2 VERTICAL DETAILS
D3 STORMWATER DETAILS
D4 HARDSURFACE DETAILS
D5 PLAZA SHADE STRUCTURE AND GATEWAY DETAILS
D6 E.C.E. NEBULA SHADE STRUCTURE DETAILS
D7 STORMWATER SECTIONS
D8 LANDSCAPE DETAILS

PROJECT ADDRESS:
12810 S. ESCANABA ST.
CHICAGO IL, 60633
Virgil I. Grissom Elementary School

Appendix

E. 128TH ST.
S. MUSKEGON AVE.
S. ESCANABA AVE.
E. 129TH ST.

REMOVE CONCRETE PAVING AND SUB-BASE MATERIAL APPROX. 1200sf²
REMOVE ASPHALT PAVING AND SUB-BASE MATERIAL APPROX. 132,000sf²
REMOVE 6’ IN CHAIN LINK FENCE
REMOVE SOD AND SUB-SOIL AS REQUIRED

DEMOLITION PLAN

SCALE: 1” = 40’-0”

DEMOLITION NOTES:
1. THIS PLAN IS INTENDED AS A GUIDELINE FOR DEMOLITION. LANDSCAPE ARCHITECT MAKES NO WARRANTY AS TO THE COMPLETENESS OR EXACTNESS OF ITEMS TO BE REMOVED.
2. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SAFETY IN, ON OR ABOUT THE PROJECT SITE. ANY DAMAGE TO PROPERTY, INJURY TO PERSONS (INCLUDING WORKERS) OR ANY OTHER DAMAGES RESULTING FROM THE REMOVAL OF MATERIALS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS OR LICENSES REQUIRED FOR THE PERFORMANCE OF THE WORK AS APPLICABLE TO THE PROJECT.
4. THE CONTRACTOR SHALL NOT REMOVE ANY UTILITIES OR SYSTEMS THAT ARE CONNECTED TO THE STRUCTURE OR PROPERTY UNLESS PERMITTED IN WRITING BY THE LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT IMMEDIATELY AND SHALL NOT CONTINUE CONSTRUCTION UNTIL SAID CONFLICT CAN BE RESOLVED IN WRITING.
5. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION TO VERIFY DEPTH AND LOCATION OF ALL UTILITIES.
6. ANY CONSTRUCTION DEBRIS OR MUD-TRACKING IN THE PUBLIC RIGHT-OF-WAY RESULTING FROM THE WORK SHALL BE REMOVED IMMEDIATELY BY THE CONTRACTOR.
7. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, SIGNS, BARRICADES, FLAGMEN AND OTHER DEVICES NECESSARY TO PROVIDE FOR THE PUBLIC SAFETY ON AND ABOUT THE SITE. THE CONTRACTOR SHALL FURNISH APPROPRIATE TRAFFIC CONTROL AND SAFETY MEASURES IN ACCORDANCE WITH THE REQUIREMENTS OF APPLICABLE HIGHWAY AND TRANSPORTATION AUTHORITY.
8. CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PROTECT BOTH ON SITE AND ADJACENT PROPERTY, TREES AND VEGETATION. AREAS OUTSIDE THE LIMITS OF WORK AS SHOWN ON THE PLANS SHALL REMAIN UNDISTURBED. ANY ITEMS NOT INTENDED FOR DEMOLITION SHALL BE PROTECTED. ANY DAMAGE WILL BE REPAIRED AT THE CONTRACTOR’S EXPENSE.

LAYOUT NOTES:
1. REFER TO SITE SURVEY FOR EXISTING CONDITIONS. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS PRIOR TO COMMENCING OPERATIONS.
2. EXISTING TREES SCHEDULED TO REMAIN SHALL BE PROTECTED PER LOCAL JURISDICTION AND SCHOOL DISTRICT REQUIREMENTS.
3. SHOULD SITE CONDITIONS DIFFER FROM THE DRAWINGS, CONTACT LANDSCAPE ARCHITECT IMMEDIATELY FOR clarification.
4. ALL SAW CUTS AT ASPHALT AND CONCRETE INDICATED TO BE REMOVED SHALL BE MADE TO FULL DEPTH OF MATERIAL.
5. REMOVE SOD AND SUBSOIL AS REQUIRED.
6. REMOVE EXISTING FENCE(S) TO NEAREST POST.
7. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS.
8. LAYOUT ALL FUNDING, SCALES, SLOPING AND PAVING PATTERNS AS CLOSELY TO PLANS AS POSSIBLE. DEVIATION FROM THE PLANS IS NOT ACCEPTABLE WITHOUT PERMISSION FROM OWNER’S REPRESENTATIVE.
9. SUBGRADES IN HARDSCAPE AREAS SHALL BE COMPACTED TO 95% MAXIMUM DENSITY.

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Scale: 1” = 40’-0”

Demolition Plan

S2
1. EXISTING INFORMATION SHOWN ON THE DOCUMENTS WAS PROVIDED BY THE OWNER OR RETREIVED FROM DOCUMENTATION AVAILABLE IN THE PUBLIC DOMAIN. CONTRACTOR SHALL VERIFY ALL EXISTING INFORMATION AND CONDITIONS.
2. AN ALTA SURVEY IS REQUIRED TO BE COMPLETED FOR THE AREA WITHIN THE LIMITS OF WORK FOR THIS SITE. SURVEYOR SHALL LOCATE ALL UTILITIES ON SITE.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND APPROVALS REQUIRED TO PERFORM THE WORK.
4. CONTRACTOR SHALL OBTAIN ALL APPLICABLE PERMITS FOR WORK REQUIRED IN THE PUBLIC RIGHT-OF-WAY.
5. CONTRACTOR SHALL COMPLY WITH LOCAL ORDINANCES REGARDING WORKING HOURS.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING A SAFE, CLEAN AND ORDERLY JOB SITE AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
7. CONTRACTOR SHALL PROVIDE A SECURE SITE AT ALL TIMES DURING THE CONSTRUCTION PERIOD.
8. CONTRACTOR SHALL ENSURE THE SAFETY OF THE GENERAL PUBLIC.
9. CONTRACTOR SHALL COMPLY WITH ALL OSHA REGULATIONS RELATED TO SITE DEVELOPMENT.
10. CONTRACTOR SHALL REPORT ALL DISCREPANCIES IN PLAN VERSUS FIELD CONDITIONS IMMEDIATELY TO LANDSCAPE ARCHITECT PRIOR TO CONTINUING WITH THAT PORTION OF WORK.
11. CONTRACTOR SHALL VERIFY LOCATION OF EXISTING UTILITIES ON SITE PRIOR TO COMMENCING CONSTRUCTION AND NOTIFY LANDSCAPE ARCHITECT OF ANY CONFLICTS WITH PROPOSED IMPROVEMENTS.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING UTILITY COMPANIES TO COORDINATE WORK IN THE PROJECT AREA.
13. EXISTING CONDITIONS WITHIN THE LIMITS OF WORK SCHEDULED TO REMAIN SHALL BE THE CONTRACTOR’S RESPONSIBILITY TO REPAIR OR SUBSTITUTE AS ACCEPTED WITH THE OWNER OR OWNERS REPRESENTATIVE.
14. CONTRACTOR IS RESPONSIBLE FOR THE COST OF REPAIR TO UTILITIES, ADJACENT LANDSCAPE, PUBLIC AND PRIVATE PROPERTY DAMAGED BY THE CONTRACTOR OR THEIR SUBCONTRACTORS’ OPERATIONS DURING CONSTRUCTION.
15. EXISTING TREES WITHIN THE LIMITS OF WORK SCHEDULED TO REMAIN SHALL BE PROTECTED IN ACCORDANCE WITH LOCAL JURISDICTIONAL REQUIREMENTS.
16. PROJECT MOBILIZATION AND STAGING AREAS SHALL BE RETURNED TO EXISTING CONDITIONS OR BETTER UPON COMPLETION OF THE WORK AND ACCEPTANCE BY THE CHAIRMAN.
17. CONTRACTOR SHALL REMOVE ALL CONSTRUCTION SUPPLIES, MATERIALS, TOOLS AND TEMPORARY STRUCTURES FROM THE SITE UPON FINAL ACCEPTANCE OF THE WORK BY THE OWNER. ALL CONSTRUCTION DEBRIS AND RUBBISH SHALL BE REMOVED FROM THE SITE REGULARLY BY THE CONTRACTOR.
Virgil I. Grissom Elementary School

Appendix

CATCHMENT A
10,098 SQ FT

CATCHMENT B
3,088 SQ FT

CATCHMENT C
3,641 SQ FT

CATCHMENT D
3,162 SQ FT

CATCHMENT E
2,847 SQ FT

CATCHMENT F
2,553 SQ FT

CATCHMENT G
2,215 SQ FT

CATCHMENT H
17,505 SQ FT

CATCHMENT I & J
MOBILE UNITS
4,200 SQ FT

CATCHMENT K
29,947 SQ FT

69,462 SQUARE FEET OF CATCHMENT
PEAK RATE OF RUNOFF = 5.681 CUBIC FEET PER SECOND*
EQUATES TO 20,452 CUBIC FEET PER HOUR

*ASSUMING A PRECIPITATION FACTOR OF 1.25 WITH A RAINFALL INTENSITY OF 3 INCHES PER HOUR

Subsurface Storage Basin B
TOP OF BASIN ELEV. 0' 0"
BOTTOM OF BASIN ELEV. -4' 1"
20,205 sq ft
82,503 cubic feet

Subsurface Storage Basin D
TOP OF BASIN ELEV. -1' 0"
BOTTOM OF BASIN ELEV. -5' 2"
1,937 sq ft
8,070 cubic feet

Subsurface Basin A
TOP OF BASIN ELEV. 2' 0"
BOTTOM OF BASIN ELEV. -2'
120' x 130'
32,400 cubic feet

Subsurface Storage Basin C
TOP OF BASIN ELEV. 4' 5"
BOTTOM OF BASIN ELEV. 2' 3"
45,167 sq ft
97,861 cubic ft

Subsurface Storage Basin E
TOP OF BASIN ELEV. 0' 2"
BOTTOM OF BASIN ELEV. -4' 2"
6,735 sq ft
28,062 cubic feet

5 Subsurface storage basins hold 100,057 cubic ft of water
BASIN A 32,400
BASIN B 82,500
BASIN C 97,861
BASIN D 8,070
BASIN E 28,062
TOTAL 249,893 cubic feet of AASHTO #57 stone
AASHTO #57 stone holds 40% of its volume
249,893 x .4 = 100,057 cubic feet of subsurface water storage

STORM WATER PLAN

STORMWATER PLAN

SUB-BASIN AND INFRASTRUCTURE PLAN

SCALE: 1" = 50'-0"

STORM WATER PLAN

SCALE: 1" = 50'-0"
1. All shrub beds are to be mulched with 3" minimum depth of shredded organic cedar mulch.
Groundcover and perennial areas shall be mulched with 2" of shredded organic cedar mulch.
2. All landscape areas and sod shall be watered by an underground, automatic irrigation system.
The system shall provide 100% coverage. Shrub beds shall be watered with drip irrigation
where practical. The contractor shall perform a design build irrigation drainage for all irrigated areas.
3. The contractor is responsible for the removal of utilities, adjacent landscape, public and private
property that is damaged by the contractor or their subcontractor's operations during installation
or during specified maintenance period.
4. Contractor shall report all discrepancies in plan vs. field conditions immediately to landscape
architect prior to continuing with that portion of the work.
5. Do not disturb existing conditions to remain within the limits of work on campus.
6. The contractor is responsible for verifying all plant quantities.
7. Grading and drainage plans based on information provided by CPS. A full survey is required
prior to proceeding with the work.
8. Utility easements shall remain unobstructed and accessible for maintenance.
9. All landscape materials shall be installed prior to substantial completion.
10. Remove baskets from rootballs of trees and untie and loosen burlap.
11. In the event of a discrepancy between the number of plants in the plant list and the number
shown on the landscape plans, the greater quantity shall take precedence.
12. Treat all planting beds with pre-emergent herbicide prior to planting.
Appendix

E.C.E. 'NEBULA' AREA ENLARGEMENT

SCALE: 1" = 8'-0"

KITCHEN [COMMUNITY LEARNING GARDEN]

'NEBULA' SHADE STRUCTURE
UNDERNEATH CENTER MOUND RAISED 2' IN CENTER

2 CRESCENT MOUNDS RAISED 1.5' IN CENTER

2 BAY SWINGS AGE APPROPRIATE

OUTDOOR TABLES W/ CHAIRS

6 RISERS @ 5" EA
5 TREADS @ 15" EA
CAN DOUBLE AS OUTDOOR CLASSROOM

ADA RAMP

GEODESIC DOME GREEN HOUSE

WEEVOS SYSTEM (DESIGN #3656) BY LEARNING STRUCTURES

DOUBLE BOBBLE RIDER BY LEARNING STRUCTURES

HORIZON SYSTEM (DESIGN #388) BY LEARNING STRUCTURES

KITCHEN (COMMUNITY LEARNING GARDEN) OUTDOOR TABLES W/ CHAIRS

42" DECK FENCE
Appendix

1. **PRAIRIE GARDEN**

2. **SENSORY GARDEN**

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**SCALE:**
- **PRAIRIE GARDEN:** 1" = 10'-0"
- **SENSORY GARDEN:** 1" = 10'-0"
Virgil I. Grissom Elementary School

Appendix

3. Rain Garden

4. Butterfly Garden
FRAME AND GRATE
FINISH GRADE, SLOPE TO DRAIN
MORTAR
2-3 COURSES OF BRICK
OPTIONAL MORTAR COAT
200mm (8") CONC. MASONRY UNITS
200mm (8") AGG. FILL
VARIES 600mm (2'-0") MIN.
CONCRETE FILL, 1:5 SLOPE
OUTLET PIPE
CONC. BASE, REINF. AS REQ'D
PREPARED SUBGRADE

PAVED AREAS
UNPAVED AREAS
TOP SOIL
PAVEMENT STRUCTURE
BACKFILL EXCAVATED MATERIAL, PLACED IN 10" LIFTS, COMPACTED TO 95% OF STANDARD PROCTOR DENSITY TO WITHIN 2' OF PROPOSED PAVEMENT, CURB AND GUTTER OR SIDEWALK.

A = PIPE O.D. + 24" MIN.
PIPE BEDDING SHALL BE ANGULAR GRANULAR MATERIAL GRADATION CA-7, CA-8, CA-11 OR CA-13 TO HORIZONTAL CENTER OF PIPE COMPACTED TO 95% OF STANDARD PROCTOR DENSITY.
REMOVE UNSUITABLE MATERIAL AND REPLACE WITH COMPACTED SUITABLE MATERIAL.

STORMWATER DETAILS

Appendix
All Lines to be 4" wide (white).

Note: All dimensions shown are to center line of 2" wide painted lines (white). Numerals shall be 6" high.

Concrete Footing

3/8" x 4" Rod

Tetherball with Rope

Red Vinyl Tape

Ring w/ (2) 3/8" Set Screws

R 6'-10" typ.

R 6'

R 2'

2'-8" typ.

3' typ.

5'-4" typ.

12' Long Galvanized Post

2.4" O.D.

HARDSURFACE DETAILS

D4
1. SOLAR PLAZA SHADE STRUCTURE DETAILS AND PERSPECTIVE

2. GRISSOM GATEWAY DETAILS

NOTE: ALL STEEL STRUCTURAL COMPONENTS AND CONCRETE FOOTING SHALL BE REVISED BY A LICENSED STRUCTURAL ENGINEER PRIOR TO FABRICATION.
4" SQUARE TUBE STEEL PIPE JOISTS
6" ROUND STEEL PIPE COLUMN
1/4" STEEL SHEATHING
4" SQUARE TUBE STEEL PIPE RAFTERS
BOLTED CONNECTION
1/2" STEEL REBAR
CONCRETE

PLAN VIEW OF ECE SHADE STRUCTURE
LINEAR STRUCTURE OF ECE SHADE STRUCTURE
SECTION VIEW OF ECE SHADE STRUCTURE
ELEVATION VIEW OF ECE SHADE STRUCTURE

SCALE: 1/4" = 1'-0"

NOTE: ALL STEEL STRUCTURAL COMPONENTS AND CONCRETE FOOTING SHALL BE REVISED BY A LICENSED STRUCTURAL ENGINEER PRIOR TO FABRICATION.
Appendix

STORMWATER SECTION

CURL 4' 10"
GUTTER 4' 4"
PERVIOUS CONCRETE

PROPOSED HIGHWAY GRATE INLET WITH UNDERDRAIN CONNECTION
TOP OF GRATE 3' 2"

BIORETENTION SOIL
AASHTO #57 STONE

NOTE:
VER. SCALE: 1"=5'
HOR. SCALE: 1"=10'

EXISTING SUBSURFACE TO BE SCARIFIED
8" PERF. H.D.P.E

2% SLOPE TO RAINGARDEN

BIORETENTION SOIL
AASHTO #57 STONE

SCALE:
STORMWATER SECTION
1" = 16'-0"

SPIRAL STORMWATER SECTION

NOTE:
VER. SCALE: 1"=5'
HOR. SCALE: 1"=10'

BIORETENTION SOIL
AASHTO #57 STONE

SCALE:
SPIRAL STORMWATER SECTION
VER. 1" = 5'-0"  HOR. 1" = 10'-0"

TRACK AND PATH STORMWATER SECTION

BIORETENTION SOIL
AASHTO #57 STONE

SCALE:
TRACK AND PATH STORMWATER SECTION
1" = 10'-0"

D7

STORMWATER SECTIONS

ARTIFICIAL ATH. TURF
LATEX RUBBER RUNNING TRACK

NOTE:
VER. SCALE: 1"=5'
HOR. SCALE: 1"=10'
Kids’ Drawings

GARDEN PROTECTOR

THE FARM

ORGANISM

THE ORCHARD

THE HELICOPTER

THE GARDEN PLAN