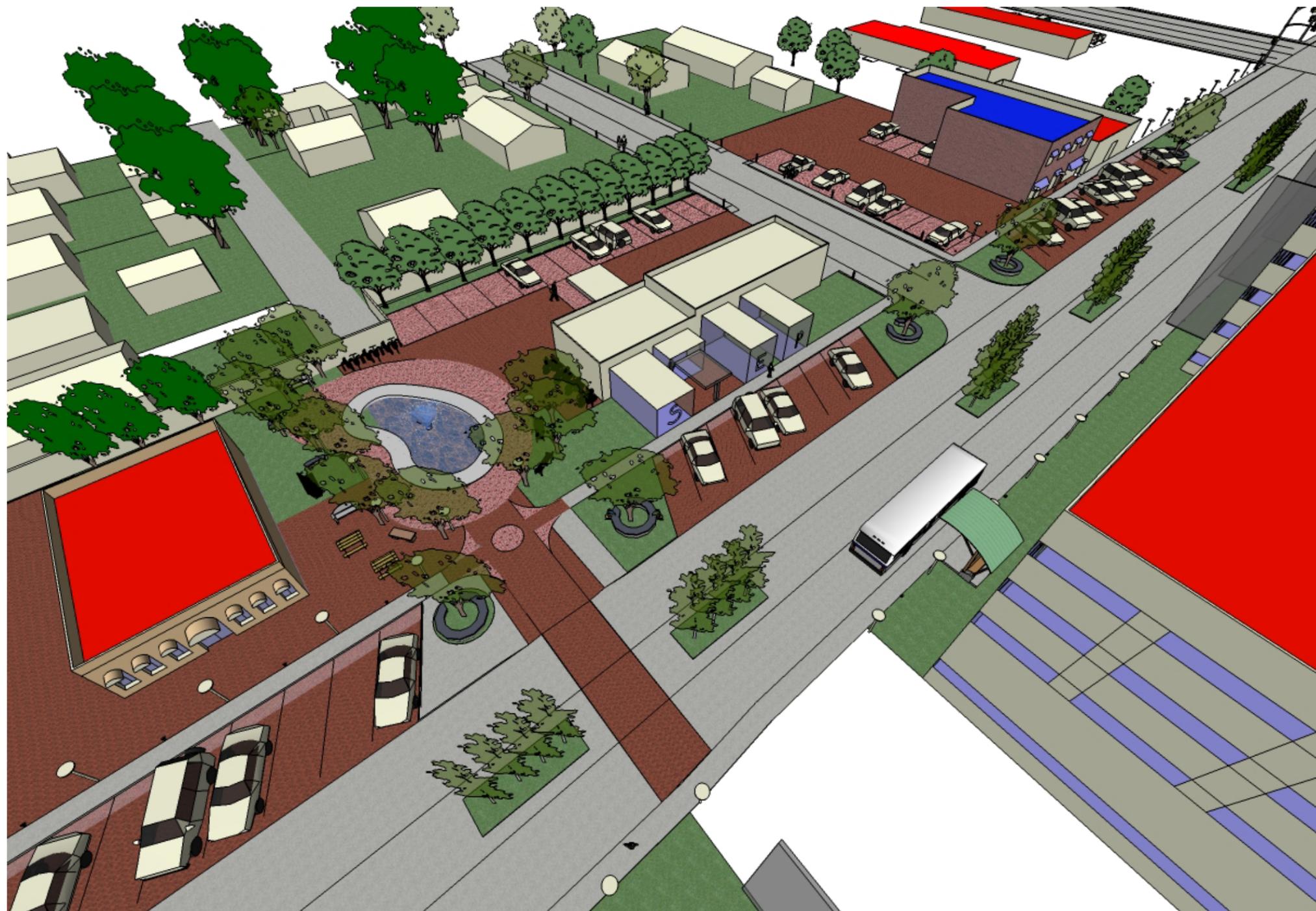


STEP Pharmacy And Route 66 Development

A Step In The Right Direction



The University of Oklahoma
Graduate College

STEP Pharmacy

A Professional Project
submitted to the Graduate Faculty
in partial fulfillment of the requirements for the degree of
Master of Architecture

by
Swaroop Kumar Jonathan Bijjiga
Tulsa, Oklahoma
2006

Apporved for the Urban Design Studio
of
The College of Architecture

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STEP Pharmacy

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Bijjiga, Swaroop Kumar Jonathan.

Introduction

STEP is an acronym for: Safety, Tolerability, Efficacy and Price. Tentatively named “Rx 66,” the STEP Pharmacy will provide only the most efficacious, low-cost prescription drugs for the most common conditions in Tulsa. In addition, “Rx 66” will provide patient education on disease management and lifestyle changes (e.g. healthy eating). Every Tulsan will have access to the STEP pharmacy. The STEP pharmacy will be located on Route 66. Specifically on the north side of 11th Street between St. Louis and Troost Avenues, across from the OU Family Medicine Center, a part of the Hillcrest Campus.

The STEP pharmacy is supported by Dr. Gerard Clancy, President, OU-Tulsa and Dean, College of Medicine, Tulsa, Dr. Steve Meixel, MD, Department of Family Medicine, Dr. Michael Morse, Chair, Family Medicine, Jack Coffey, Associate Dean, External and Professional Affairs & Clinical Associate Professor, College of Pharmacy, Dr. Charles Henley, Vice-Chair & Director of Research, Family Medicine, John Ference, Clinical Assistant Professor, Coll. of Pharmacy, OU-Tulsa Community Outreach Partnership Center and Steve Dobbs, Hillcrest Medical Center President and CEO.

Low-income Tulsans and their families, for the most part, do not receive quality longitudinal care: They rarely see the same doctor at each clinic visit. With different doctors prescribing various pharmaceuticals, these individuals do not always (or consistently) receive medications that are both effective and affordable, which impacts their health status. By combining primary care and pharmacy services, physicians will be better able to prescribe the best drugs and better track patient compliance. In addition, educational components will be provided through the facility that will teach the community about pharmacologic and non-pharmacologic strategies for managing particular diseases. “Rx 66” will consider the financial strains on its patients and provide medications that are a “best fit” for their healthcare needs and financial situation. Electronic medical record technology will enable researchers to better determine who the patients are, how to treat them effectively while being sensitive to cultural differences and compare results with other programs.

Rx 66 will offer Tulsa a better level of culturally-sensitive care for Tulsa’s most vulnerable populations, encourage innovative development of historic Route 66 that will enhance the appearance of 11th St, Collaborate with 6th Street Task Force’s 6th Street Infill Plan and increase safety and security of Hillcrest campus.

Patients will receive care from a physician and pharmacist working together to provide personalized care from both perspectives, learn about traditional prevention strategies in small groups which will meet at regular times

STEP Pharmacy

The STEP pharmacy resources include students (medical, nursing, OT/PT, others) who are willing to spend their time and energy and are eager to learn and help, Physicians and Pharmacists, Longitudinal Clinic, Bedlam Clinic, Patients who are Homeless, poor and un/under-insured and patients who cannot get OT/PT. “Rx 66” will supplement OU Family Medicine’s Longitudinal Clinic by treating poor and homeless, providing longitudinal care and by using EMR to identify preventive care. “Rx 66” will supplement the Bedlam Clinics and Bedlam Community Health Partnership by adding Family Medicine Center as clinic site and centralizing pharmacy operations. “Rx 66” will also supplement Center for Physically Challenged by establishing relationships to provide PT/OT services for clients and patient office visits.



View Of Proposed STEP Pharmacy And Route 66



STEP Pharmacy Program

STEP Pharmacy Program

Bedlam Alliance for Community Health is an innovative, collaborative program that has provided affordable healthcare to the indigent and underserved in Tulsa County since 2003. Their clinics are medical homes to more than 10,000 at-risk school children, residents of public housing, isolated elderly, single parents and working poor. In addition, the Bedlam Model provides an essential teaching component to OU medical, pharmacy and nursing students. Hands-on training strengthens clinical skills, overall curriculum and cultural competency while heartening an appreciation for volunteerism and efficient clinic operation. (<http://tulsa.ou.edu/medicine/bedlam/>).

“STEP” stands for “Safety, Tolerability, Efficacy, and Price”; these are the aspects of any medicine that concern the patients.

The STEP Pharmacy will be under the direction of the College of Pharmacy. The STEP pharmacy will serve any patient who needs its services, but especially, it will serve the Bedlam Clinic patients and the very poor that come to OU clinics. Every month patients are admitted to the hospital because they could not afford to get the medicine (say an antibiotic) that was prescribed in the ER, and then they return with a much worse infection or other condition like heart failure. (Dr. Steve Meixel)

The underinsured and uninsured patients with chronic disease states will create a demand for 100-200 prescriptions per day. Two pharmacists will be working for the STEP pharmacy: 50% of their time will be dispensing prescriptions and 50% of their time will be seeing patients in the counseling rooms discussing their medications and disease states. Students will learn to manage a medication consultation clinic as well as a pharmacy. There will be didactic discussions in a classroom/conference room where public education programs such as “Ask your pharmacist about diabetes” night. (Dr. Jonathan Ference)



OU Family Medicine Clinic

With education as one of the primary goals, the physician/ pharm D team maintains access to the newest ideas in pharmacologic treatment and puts them into practice.

The college-operated physician practice handles more than 230,000 patient visits annually, specializing in family medicine, internal medicine, pediatrics, obstetrics and gynecology, psychiatry and surgery. Specialities included within these departments are child abuse, drug and alcohol abuse treatment, high-risk obstetrics (only group in Tulsa), dermatology, adult and pediatric gastroenterology, geriatrics, pediatric infectious disease, laparoscopic surgery, pain management, preventive medicine, adult and pediatric rheumatology, sports medicine and treatment for urinary incontinence, to name a few.

The Step pharmacy will provide prescription medication for patients. There are two primary services of the STEP pharmacy

1. Preparation of prescriptions

- A. Data entry
- B. Typing the prescription label
- C. Selecting the correct stock bottle
- D. Accurately counting, pouring or reconstituting the appropriate quantity of a drug product
- E. Selecting the proper container
- F. Affixing the prescription label to the container
- G. Affixing the auxiliary labels, if indicated
- H. Preparing finished product for inspection and final check by pharmacist

Preparation of prescriptions is the role of a pharmacy technician. There will be one or two technicians working for the STEP pharmacy. Technicians can be students doing their internship or working as a research assistant for the College of Pharmacy. A technician/ student is always under the supervision of a licensed pharmacist. Prescription medicines are always handed out to the patient by the pharmacist

2. Dispensing

Once prescriptions are prepared they are dispensed to the patient by the pharmacist.

Description of Activities

1. Preparation of prescriptions

- Data entry area needs a computer and a desk for a technician/student within a space of 25 sq. ft.
- typing the prescription label, selecting the correct stock bottle, accurately counting, pouring or



Route 66 in Tulsa

The family medicine clinic is on the Historic Route 66. Since Route 66 cuts a diagonal path through the heart of Oklahoma, traveling the Route provides the perfect opportunity to “wander off the path” and visit many communities not located directly on the Route.

On the Route itself, the traveler will find quaint and wonderful small towns and big cities with their mix of art deco and modern architectural styles. Road warriors will also find antique stores and gift shops of all kinds, old buildings (from restored to ruins), restaurants, a diversity of museums, city parks, lakes, and open stretches of road. (<http://www.oklahomaroute66.com/theroad/factsheet.html>)



reconstituting the appropriate quantity of drug product, selecting the proper container, affixing the prescription label to the container, affixing the auxiliary labels, if indicated needs 50 sq. ft. of free workspace for a technician/ student

Preparing finished product for inspection and final check by pharmacist needs 25 sq. ft. of space and a computer before he goes into the consultation rooms to hand out the drug to the patient.

2. Dispensing

Dispensing in the STEP pharmacy is done in a closed area for visual and auditory privacy. Two consultation rooms with 100 square foot area each will be necessary. The rooms will have a desk with chairs on both sides.

3. Storage

Active storage area is where the drugs are kept in racks. This area should be connected with the area for “preparation of prescriptions”. A total of about 700 square feet would include space for refrigeration/storage units and space for hand washing. The actual storage area where the drugs will be racked will be 600 sq. ft. The racks will be separated by aisles three feet wide. Adequate lighting is needed to read the labels on these drug containers.

Activity	Area in Square Feet
• Active storage	600
• Refrigeration	50
• Hand washing	10

***Art Deco in Tulsa:** In the 1920s, Tulsa was dizzy with new prosperity and rapid growth. Earlier oil discoveries earned Tulsa the nickname “Oil Capitol of the World.” Industry leaders lured businesses, bankers, and investors to the city. Its population doubled, fueling a building boom equal to \$1 million a month. Tulsa had no established infrastructure or architectural past, which left it free to experiment with new styles. The popular style of the time was Art Deco.*

Art Deco originated in Europe in 1925 and quickly became popular all over the world. The Junior League of Tulsa’s 1980 history of Tulsa Art Deco points out that the phrase “Art Deco” was coined by English historian Bevis Hillier as an abbreviation of Exposition des Arts Décoratifs et Industriels Modernes, an international exposition held in Paris in 1925 to showcase designers working in a new style.

This new style departed from ancient or classical themes, which had been dominant in design and architecture for decades. The origins of Art Deco were ornamental, sophisticated, and modern. It was intended to appeal to those who could afford the finest. Through times of tremendous prosperity, depression, growth and progress, the Art Deco style defined and reflected its age. (<http://www.tulsalibrary.org/research/artdeco/artdecointulsa.htm>)

4. Public Area

Public area includes waiting spaces for patients and a training area for thirty persons at a time. A reception area to assist patients will be a part of the public area. A separate room with storage area for filing books/records is needed. Convenient toilet and locker access to the staff is needed as well.

Activity	Area in Square Feet
----------	---------------------

- | | |
|--|-----|
| · Education and teaching room for 30 persons | 300 |
| · Convenient toilet and locker access | 50 |
| · Reception/Waiting/ toilets for 50 patients | 700 |

Total area

This total is a net area of assigned spaces, not a total gross area for the building. The gross area would include spaces for circulation between assigned areas, structure, mechanical and electrical spaces, the restrooms and janitor closet and any other unassigned spaces. The gross area of this building would probably be closer to 3,000 square feet.

The parking area for the STEP pharmacy is 1 per 300 sq. ft as per “Off-Street Parking and Loading Requirement. Section 1211. Use Unit 11. Offices, Studios AND Support Services” as per title 42, section 12 in the city of Tulsa ordinances. Out door waiting areas with play areas for kids will accommodate long wait hours. The pharmacy should be accessible from a bus stop for patients without other means of transport. Relevant signage will help patients of higher age group and with disabilities and the elderly.



Looking West on 11th Street

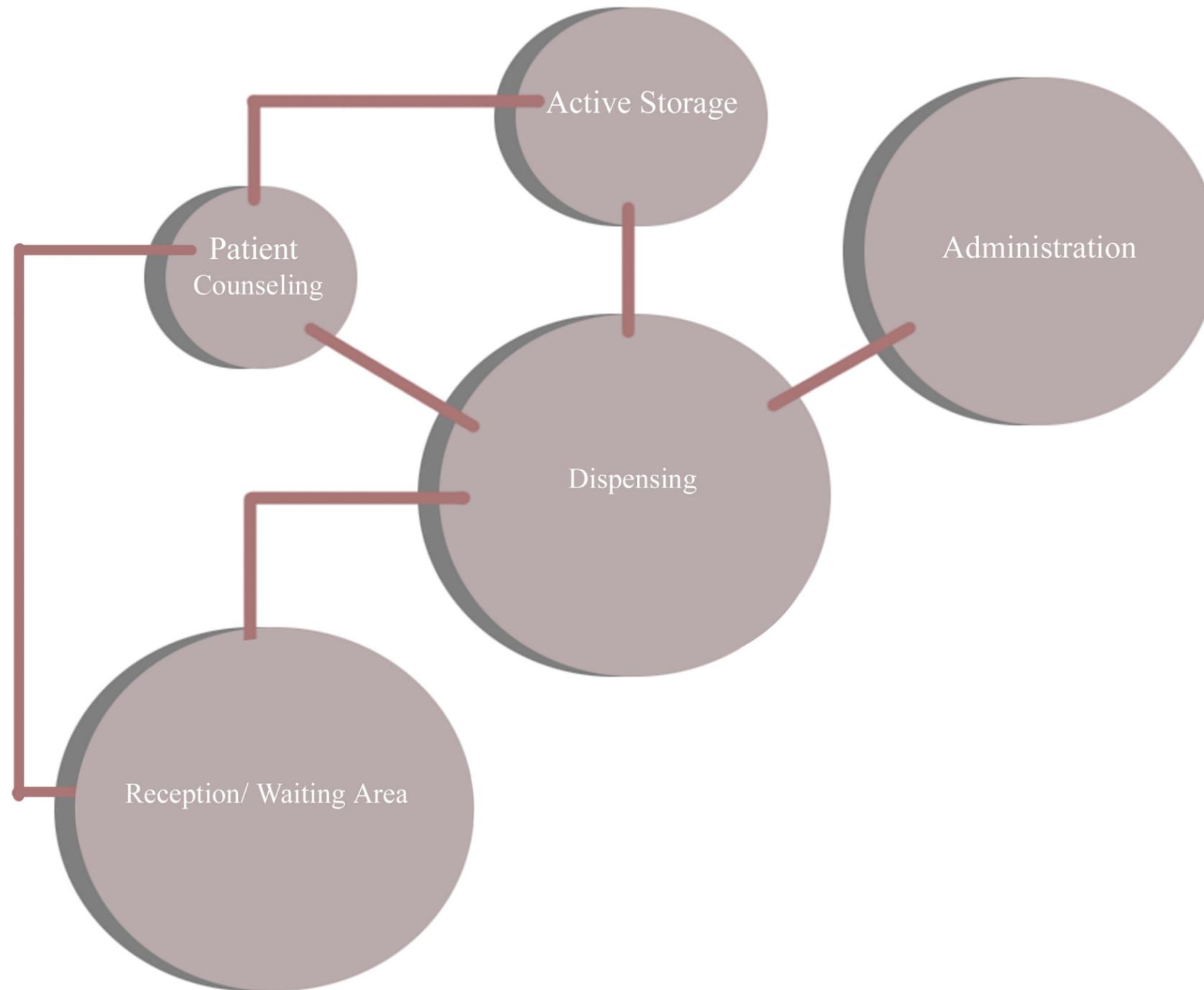
The Family Medicine Clinic is located on the 11th Street and S. St. Louis Ave. The Eleventh Street has independent businesses from car washes to mechanic’s sheds. Restaurants near the University of Tulsa are numerous. Most of these business buildings are one storey, flat roofed buildings. There are a few traditional Art Deco buildings that have been preserved over time.



Looking East on 11th Street



Flow Chart



Site Selection

Photo Survey of Available Properties



Looking west from atop Family Medicine Clinic



Looking east from atop Family Medicine Clinic



Looking north from atop Family Medicine Clinic



Looking at Steves garage from atop the Family Medicine Clinic



Store Fronts North of the Family Medicine Clinic



Looking East From The Parking Lot Of The Family Medicine Clinic



Available Properties For Sale Across From The Family Medicine Clinic

The properties across from the OU - Family Medicine Clinic consists of businesses, some of which are built right up to the property lines. Some of the businesses here include a tattoo parlor, Firestone tyre service center, a couple of garages and restaurants. The Family Medicine Clinic has looked at properties right across the street for accessibility reasons. Most of the available properties are flat roofed. There is no resemblance of any particular kind of architecture in these buildings. Most of them are bare with little or no detail. The Art Deco style of architecture which is present in one or two buildings along the street are not prominent in number. These are mostly one storey, ten feet tall buildings except for a couple which are two storeyed. The scale of these buildings is very much like the buildings in the neighborhood. The neighborhood looks neglected with not very well maintained streets and sidewalks.

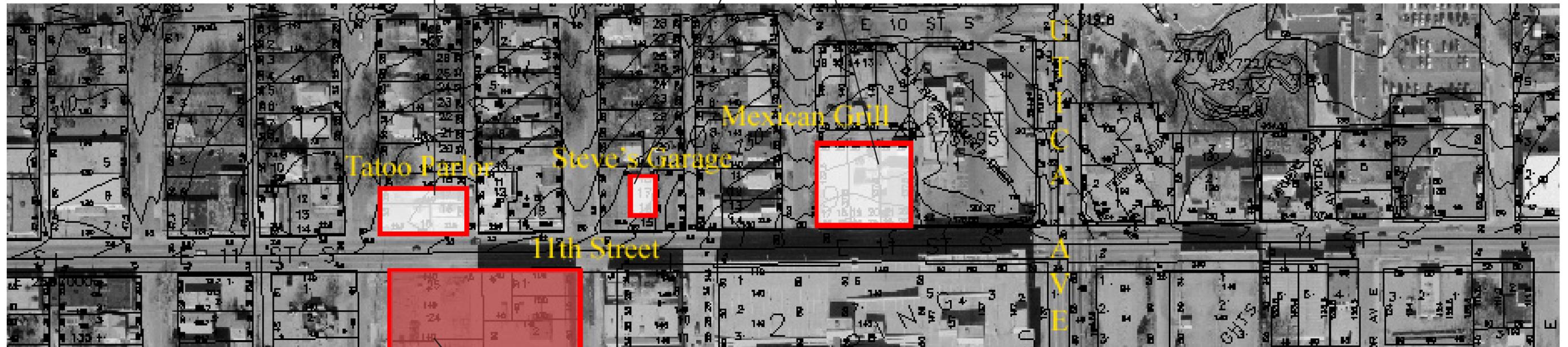
All these properties along 11th Street are accessible to the OU- Family Medicine Clinic. The other issues involved are the available amenities, available parking, the existing architecture and image of the building, flexibility in converting the building from its present use to a pharmacy and the cost factors. The STEP-Pharmacy should be in a location easily accessible by a bus route. The Tulsa Transit system connects most parts of the town. If one misses a bus at the bus stop, it will be 45 minutes before he can catch another. This is one reason why there have to be sufficient indoor and outdoor waiting areas for patients. Play areas for kids have to be provided.



The Tattoo Parlor, 11th & Trenton Avenue



Steve's Garage & Mexican Grill

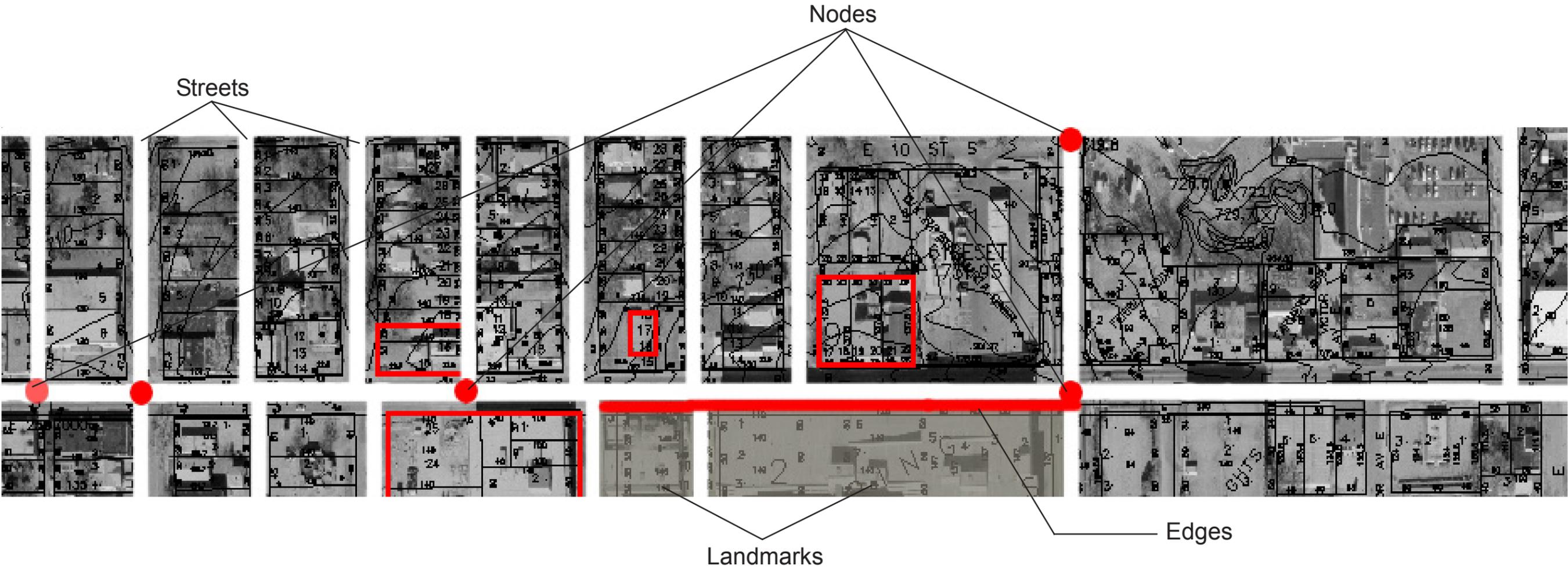


Map of Location and Surroundings of the Family Medicine Clinic and Available Properties

Lynchian Analysis

To understand the layout of a city, people first and foremost create a mental map. Mental maps of a city are mental representations of what the city contains, and its layout according to the individual. These mental representations, along with the actual city, contain many unique elements, which are defined by Kevin Lynch as a network of paths, edges, districts, nodes, and landmarks. First, paths are channels by which people move along in their travels. Examples of paths are roads, trails, and sidewalks. The second element, edges, are all other lines not included in the path group. Examples of edges include walls, and seashores. Districts are sections of the city, usually relatively substantial in size, which have an identifying character about them. A wealthy neighborhood such as Beverly Hills is one such example. The fourth element, nodes, are points or strategic spots where there is an extra focus, or added concentration of city features. Prime examples of nodes include a busy intersection or a popular city center. Finally, landmarks are external physical objects that act as reference points. Landmarks can be a store, mountain, school, or any other object that aids in orientation when way-finding.

(<http://www.csiss.org/classics/content/62>)



This area of the 11th street is mostly a business district for a depth of three hundred feet on either side. There is a prominent residential development behind these commercial units. There are also vacant lots indicating the scope for development in this area.



STEP Pharmacy Site Selection Criteria

1. Land

What are the available sites for sale?
How easily can it be acquired?

2. Access

What is the access to the site from the clinic?
Is there a convenient bus route from all parts of the town?
Can people with disabilities come to the pharmacy easily?

3. Amenity

Are there good outdoor waiting areas?
Is there an access to a public space/ park?

4. Parking

Is there existing parking on the site?

5. Image

What kind of architecture should the building have?
Should it be a new building or a reuse of an existing building?

6. Adjacency

Can the pharmacy be located far from the clinic?
Are there any service areas and utilities shared between the clinic and the pharmacy?

7. Flexibility

Is there room for future expansion?

8. Proximity

Other desirable adjacencies
Is there a bus stop nearby?

9. Catalyst

Will this project encourage future development?
Does the site or the surrounding waiting areas give visitors reasons to linger?

10. Cost

Are there special site conditions affecting construction cost?

Site Selection Evaluation Table												
	Land	Access	Amenity	Parking	Image	Adjacency	Flexibility	Proximity	Catalyst	Cost		
Steve's Garage	5	2	4	4	4	2	4	2	4	2	33	
El Rancho Grande	5	1	2	4	4	1	4	1	4	2	28	
Tattoo Parlor, Pink Eye	5	4	2	4	2	4	2	4	2	2	31	
Lot-a-Burger	5	4	4	4	2	4	1	4	2	1	31	

The evaluation is based on a point system. The site that scores the most points in the above mentioned criteria is chosen. The lowest score is when there are limitations in the site selection criteria. The point system is totally my creation. It is from my knowledge of the selected sites, that I came up with high or low points in various categories. The maximum possible score in each category is five points and the minimum is zero. When the scores of various sites were added up Steve’s Garage scored the most points.

Steve’s Garage is a brick building plastered with stucco and painted white on the exterior walls. The interiors of the garage can be remodeled into a pharmacy . There is a bus stop right across from the garage. Though the garage is located away for the Family Medicine Clinic , it is a walkable distance. There is ana opportunity for designing outdoor waiting areas because of the size of the lot. The building footprint is approximately fifteen percent of the lot area. There is pleny of space for parking. There is an opportunity for further expansion northwards into the neighborhood. The architecture though not traditional Art Deco style, represents the architecture of some of the buildings on Route 66. The architectural character of the facility is industrial in nature. The garage doors can be removed and built to the property line. These can be used as waiting areas for visitors. Use of natural light via these glass boxes can help light the facility and avoid the dark areas within the building. The rest of the building can be remodeled. The other properties for sale along the street can be acquired for future ventures of OU. Steve’s Garage being away from the clinic has its advantages such as the public space from the Family Medicine Clinic to the garage can be redesigned to suit pedestrians, thus making the whole area a pedestrian friendly, walkable place with places to eat, exercise and relax.



Site Area: 13,952 sq. ft.
 Building Area: 2100 sq. ft



Steve's Garage



Front and Sideyard of Steve's Garage



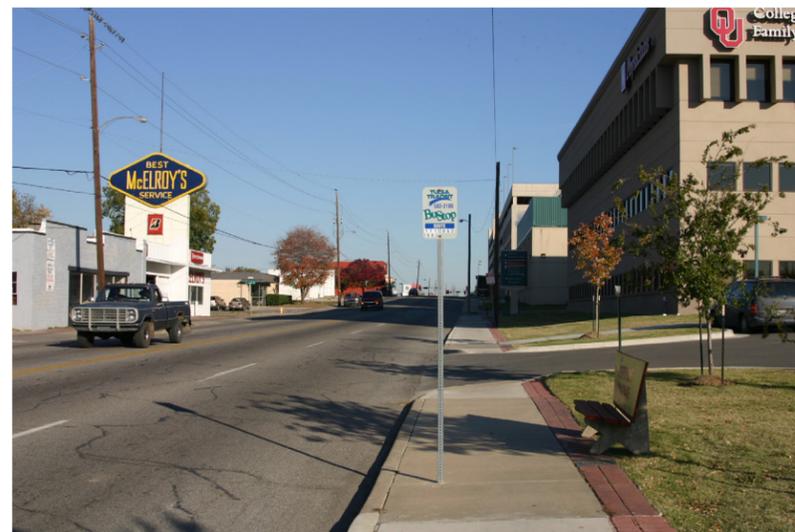
Backyard of Steve's Garage



Rear Wall of Steve's Garage



Structures Across Steve's Garage

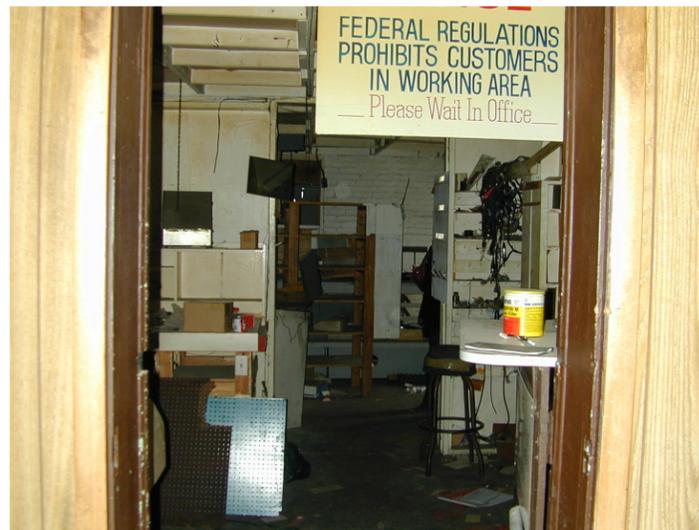


Steve's Garage in Relation to the Family Medicine Clinic



Hillcrest Medical Center's Structured Parking Garage

Steve's Garage Interiors



STEP Pharmacy Design

Tulsa County Pharmacy - A Case Study

According to Linda J. Johnston, Director of Social Services, the Tulsa County Pharmacy is a non-profit community service oriented pharmacy serving the uninsured and the underinsured population in Tulsa County. Every Tulsa has access to the pharmacy. In January 2005, after seven years of legislative activity, Tulsa County Social Services and the Tulsa Medical Society began recycling medications from eight nursing homes around the county and delivering them to indigent citizens, local non-profits and Hurricane Katrina survivors. The University of Oklahoma estimated that in Tulsa County alone, nursing homes destroy up to \$7 million in medications annually. Since they are required to flush them, this is harmful to the environment as well as a waste for those who might need the medications but cannot afford them.

The process for the Recycled Medication Program begins with the Director of Nursing at county nursing homes collecting the extra medications and having one of the county's 15 retired physicians who work with the program take the medications to the county pharmacy. There, the medications are tested, repackaged and distributed free of charge to those members of the community who are not otherwise able to afford them. Also, the program was able to fill 190 prescriptions for Family and Children's Services, as well as providing OTC medications to most indigent health care clinics, homeless shelters and mental health agencies in the county. Katrina survivors at Tulsa's Camp Gruber also received free medications. Since the program's inception, 6,114 prescriptions have been filled at an estimated value of \$1.3 million. (http://www.naco.org/Template.cfm?Section=Acts_of_Caring_Awards&Template=/cfiles/awards/acts_res.cfm&selectedId=142)



Office Space



Pharmacist/ Technician Work Space



Reception



Waiting Area For Patients



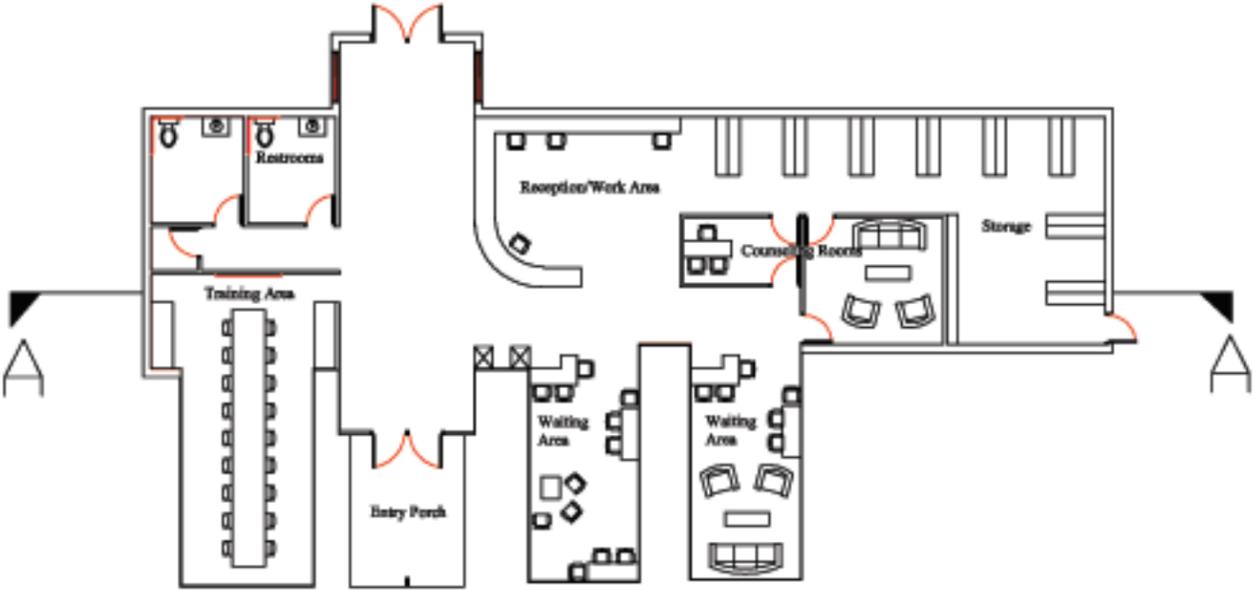
Drug Storage Area



Proposed STEP Pharmacy Plan



Front Elevation



Plan



Section at "AA"

Scale 1:200



View Of Proposed STEP Pharmacy

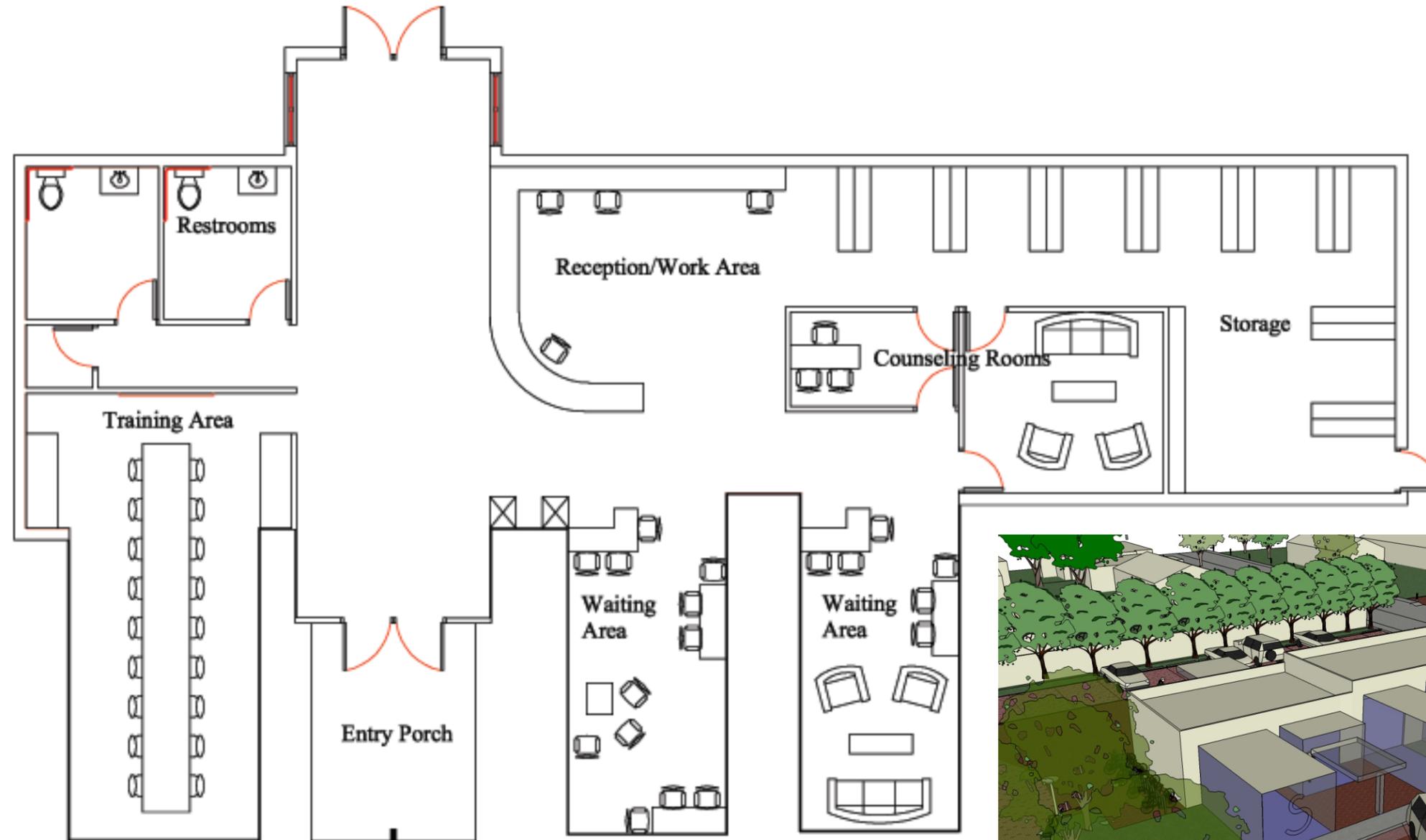


View Of Proposed STEP Pharmacy And Surroundings



Proposed STEP Pharmacy Plan

Site Area: 13,952 sq. ft
Building Area: 3000 sq. ft



PLAN

Scale 1:100



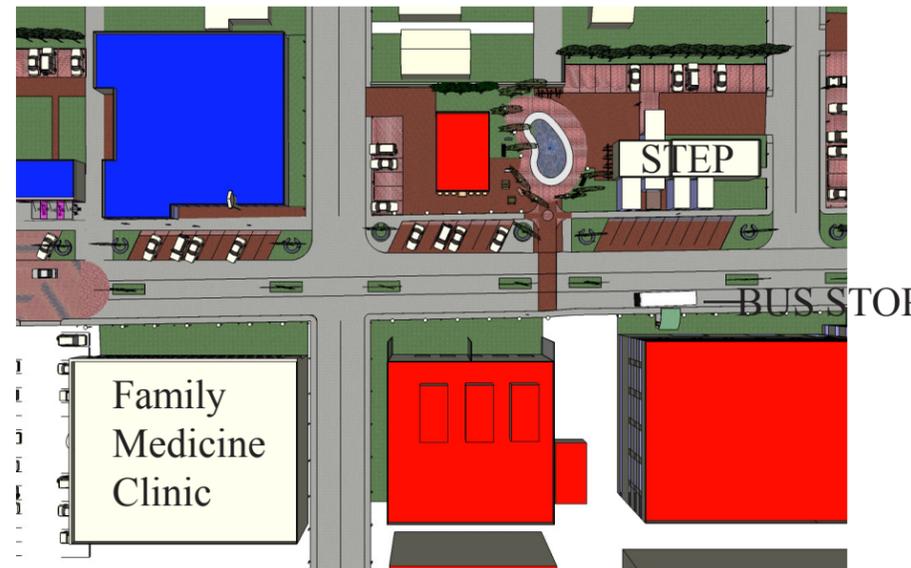
Close Up View of Proposed STEP Pharmacy



Proposed STEP Pharmacy Site Plan



2X



4X

The graphics show the various elements within the site, their relationships with one another and with the surroundings, both immediate and distant. Parking is to the north of the site, fountain to the west, a residential street to the east and Eleventh Street to the north. Parking to the pharmacy can be accessed from the street west of the site. A landscape buffer is proposed between the pharmacy and the neighborhood. The fountain to the west can act as a buffer and also keep temperatures down in summer. It can also be a place to relax, gather in groups to discuss a proposal and a place to eat lunch. A fence can be built along the northern property line to avoid trespassing. There is an existing bus stop right across the pharmacy. There is another bus stop at the clinic itself. Since both these bus stops are on the same side of the street, a bus stop is proposed on the other side of the street across from the clinic. If one would get down the bus at the clinic, he/she can cross the street and walk down to the pharmacy after getting a prescription. A canopy is proposed for shade for people waiting for the bus. On-street parking can be used by anyone visiting the pharmacy.



Proposed Bus -Stop



Proposed STEP Pharmacy Site

Future Proposals

Future Proposals

The Family Medicine Clinic handles more than 230,000 patient visits annually, specializing in family medicine, internal medicine, pediatrics, obstetrics and gynecology, psychiatry and surgery. Specialties included within these departments are child abuse, drug and alcohol abuse treatment, high-risk obstetrics (only group in Tulsa), dermatology, adult and pediatric gastroenterology, geriatrics, pediatric infectious disease, laparoscopic surgery, pain management, preventive medicine, adult and pediatric rheumatology, sports medicine (including evaluation and assessment) and treatment for urinary incontinence, to name a few.

Part of Dr. Steve Meixel’s vision is to build a facility for every speciality. This will help each speciality to have their own space and infrastructure which inturn will better enable them to serve the patients. As of now the other uses for the Family Medicine Clinic include a OB/GYN Clinic, Gigi’s Cafe and a child care center. The OB/GYN clinic will be run by the Family Medicine Clinic. The Lesters Auto Parts Service building south of the Family Medicine Clinic can be used for this purpose. Like Steve’s Garage, the Lesters Auto Parts Service building is a brick building, plastered with stucco and painted grey on the outer walls. The interiors are wide spanned and can be remodeled for a clinic.



West Elevation of Lesters Auto Service



Site Plan of Proposed OB/GYN Clinic



View of Proposed OB/GYN Clinic



Front Elevation of Lesters Auto Service

The McElroy’s Tyre Service building is an extension of the Lester’s building. McElroys is a wide spanned single storeyed building with similiar characteristics to Lesters. This building can be used as a fitness center for all age groups by the sports medicine department of the Family Medicine Clinic. University of Oklahoma Sports Medicine is a multi-disciplinary group striving to improve human health and performance through education, research and treatment.

It offers a wide range of services including:

- Diagnosis and treatment of musculoskeletal injuries
- Assisting with medical conditions that may affect activity participation or performance
- Human performance testing
- Sports Psychology
- Sports Psychiatry
- Physical Therapy
- Musculoskeletal manipulation therapy
- Exercise prescription and training program planning
- Weight loss programs



Lesters and McElroys



2X



4X

View Of Proposed Sports Medicine Clinic



McElroys Tyre Service



Gigis’s Cafe is a place where grandparents can take their grand children and spend the day. The main purpose is to create an environment where kids can eat heathy, play and rest during the day. The grand- parents will be adviced about heathy eating habits for their grandkids. Nutrition classes for all age groups will be conducted here. The child care center will be day care center with an educational component for parents for raising healthy kids. The child care center will take a more informal structure, focussing on overall child development.

The Tattuo Parlor and the Pink Eye building which is a dance club for all age groups can be used for these purposes. Ample parking can be created to the north of lot behind these structures. An outdoor area can be to the west of the lot. Existing trees can provided shade for playing kids. Though these buildings as they exist have a lesser foot print, additions can be made to the north of these buildings if needed. The lot needs fencing to the west and north to prevent kids from heading onto the street. The fence can be turned into a fresco wall, displaying Route 66 history. With a healthy food restaurant being a major part of the facility, outdoor eating areas can be provided making this a place to come, eat healthy and spend time away from work.



Pink Eye and Tattuo Parlor



Site Plan Of Proposed Gigi’s Cafe



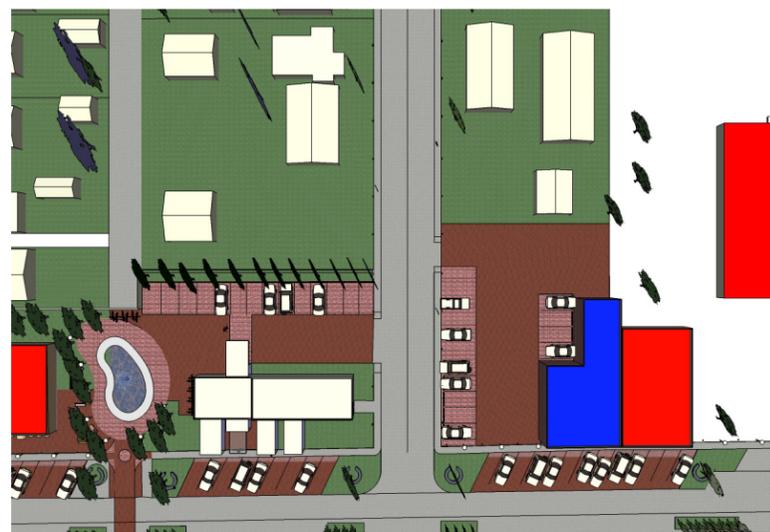
2X



4X

View Of Proposed Gigi’s Cafe

The El Rancho Grande is a mexican restaurant. Located further down the street east of the Family Medicine Clinic, this restaurant is for sale with two single storey houses north of the restaurant and a duplex across the street all owned by the owner of the restaurant. OU needs housing for its students and staff and these houses can be used as housing for a start up. As the need grows there are plenty of properties for sale in this section of town, which can be bought to add to the housing component. This would make this area convenient for students and staff with places to eat, exercise and pedestrian friendly streets to walk to work.

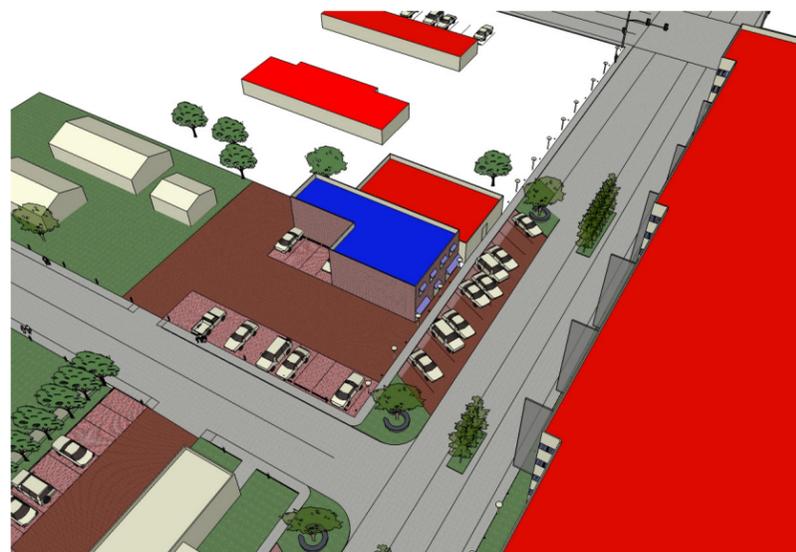


2X



4X

Site Plan Of Proposed Housing

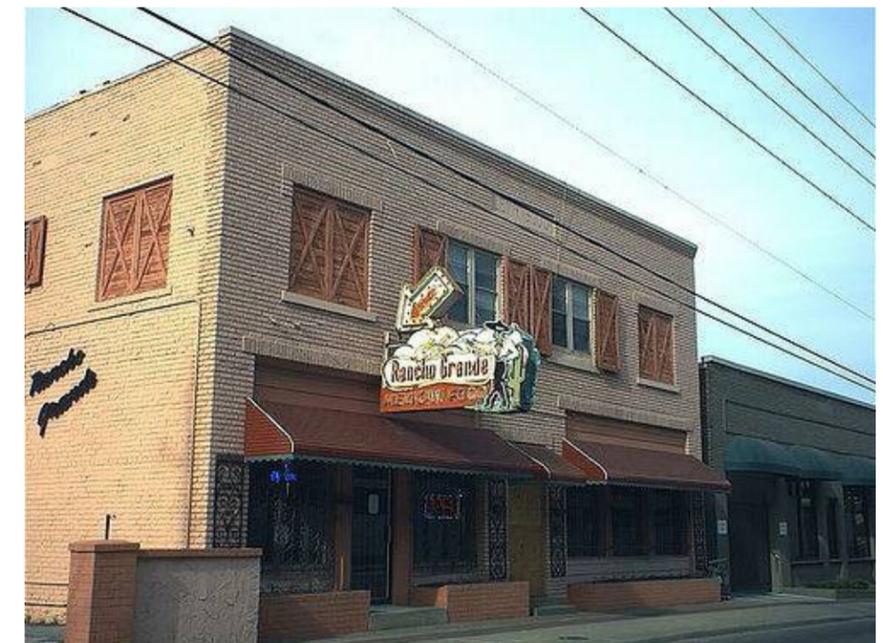


2X



4X

View Of Proposed Housing



Front Elevation of El Rancho Grande



Steve's Garage And El Rancho Grande

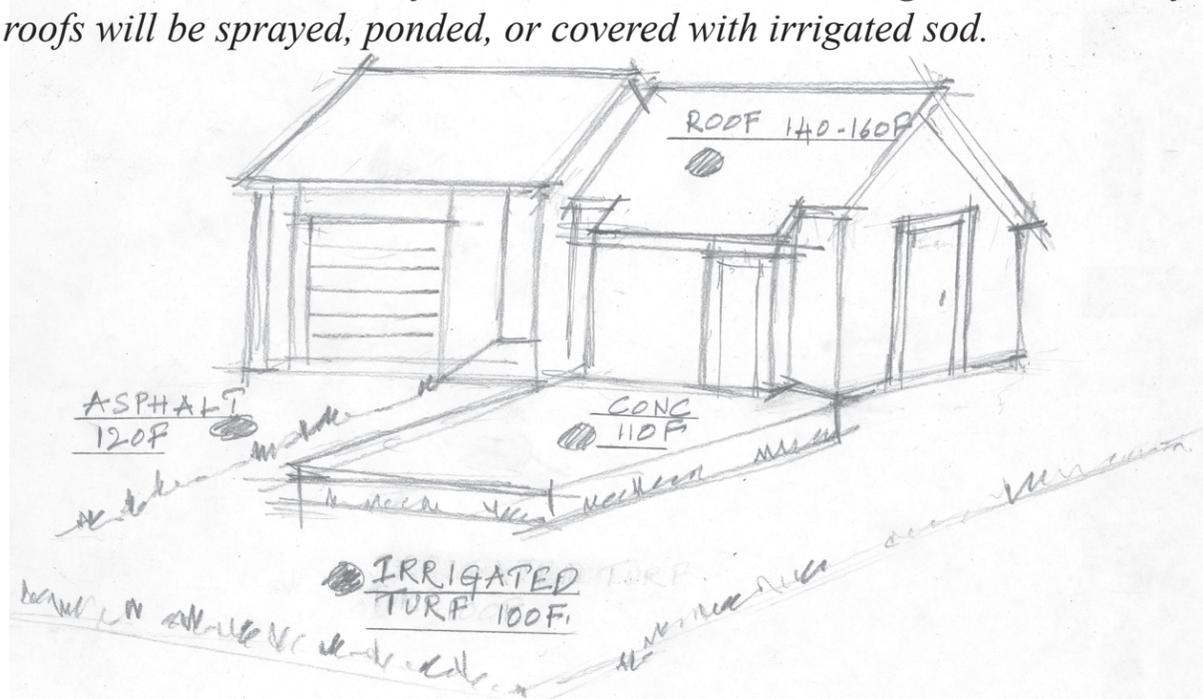


A fountain can be accommodated on the western section of the Steve’s garage site. The fountain will be a place to relax and will be an attraction for visitors travelling on Route 66. The “controls building” west of Steve’s garage can be renovated into a restaurant. The space around the fountain can be an outdoor dining area, which can be leased out by OU on a monthly basis for night time use by the restaurant. During the day, it can be a place for people coming to the pharmacy to relax, gather as groups to discuss a proposal and a space to chat and spend the lunch hour. Having a water body and trees will reduce heat generated due to radiation in summer thus creating a pleasant outdoor space.

(The following notes in italics and graphics in black and white are direct excerpts from Time Saver Standards For Urban Design, 4.8 - 12). The graphics in color are my own creation. The climatic benefit of landscaped ground cover is seldom considered. On a sunny summer day, an acre of turf may evaporate about 2400 gallons of water. At this rate, the rear yard of a typical 1/4 acre lot will have the cooling effect of 2 million Btu per day. This has a significant influence on air temperature. In similiar terms, the daily evaporation from a mature beech tree is said to provide an air cooling effect of one million Btu - the equivalent of 10 room-sized air conditioners operating 20 hours a day.

The difference in surface temperature between grass and asphalt can easily exceed 25 degree F. The air temperature in the “microclimate zone” (one to four feet) above these surfaces also differs appreciably, registering on the order of 10 degree F or more. The relationship of lawn and other living ground cover surfaces to non-evaporating surfaces (driveways, streets, roofs) will in part determine neighborhood air temperatures. These in turn, will influence the cooling land on houses in the area as well as the suitability of natural ventilation as a colling statergy. Additionally plants can create frest air. State in a different way, vegetation should be maximized, and where possible, manmade surfaces such as streets and roofs should be shaded by trees

Non- living surfaces are much hotter than grass (which would be cooler yet, if well irrigated) since they don’t dissipate heat through evaporation. A black roof is hotter than an asphalt driveway, because the ground underneath the paving stores heat. The hottest roof will be one with insulation right under the roofing-having negligible mass. The coolest roofs will be sprayed, ponded, or covered with irrigated sod.



Site Plan of the Fountain



Human Eye View of the Fountain



Birds Eye View Of The Fountain



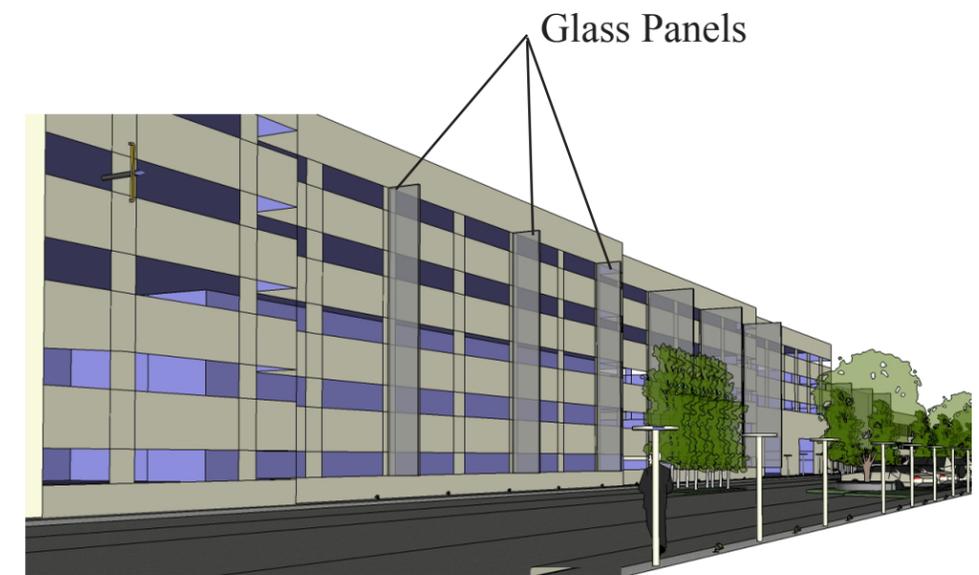
The structured parking garage across from the proposed STEP pharmacy can be used for display units. These units are basically glass panels mounted perpendicular to the surface of the structured parking wall. They extrude about 6 feet to 12 feet depending on the space available. These display panels can be used to advertise important events in the city and also to propagate the programs of the Family Medicine Clinic. They can be controlled by a computer and an artist can use them as a paint board to communicate ideas. Most of the community programs that OU does through the Family Medicine Clinic can be better brought to public notice by displaying ideas on these billboards. This part of the 11th street has a traffic count of 17, 000 cars a day is also a major arterial connecting road to downtown and attracts a lot of attention.



Birds Eye Level View of the Parking Garage



Human Eye Level View of the Parking Garage from Proposed STEP Pharmacy



Human Eye Level View of the Parking Garage

Street Design

On Street Parking

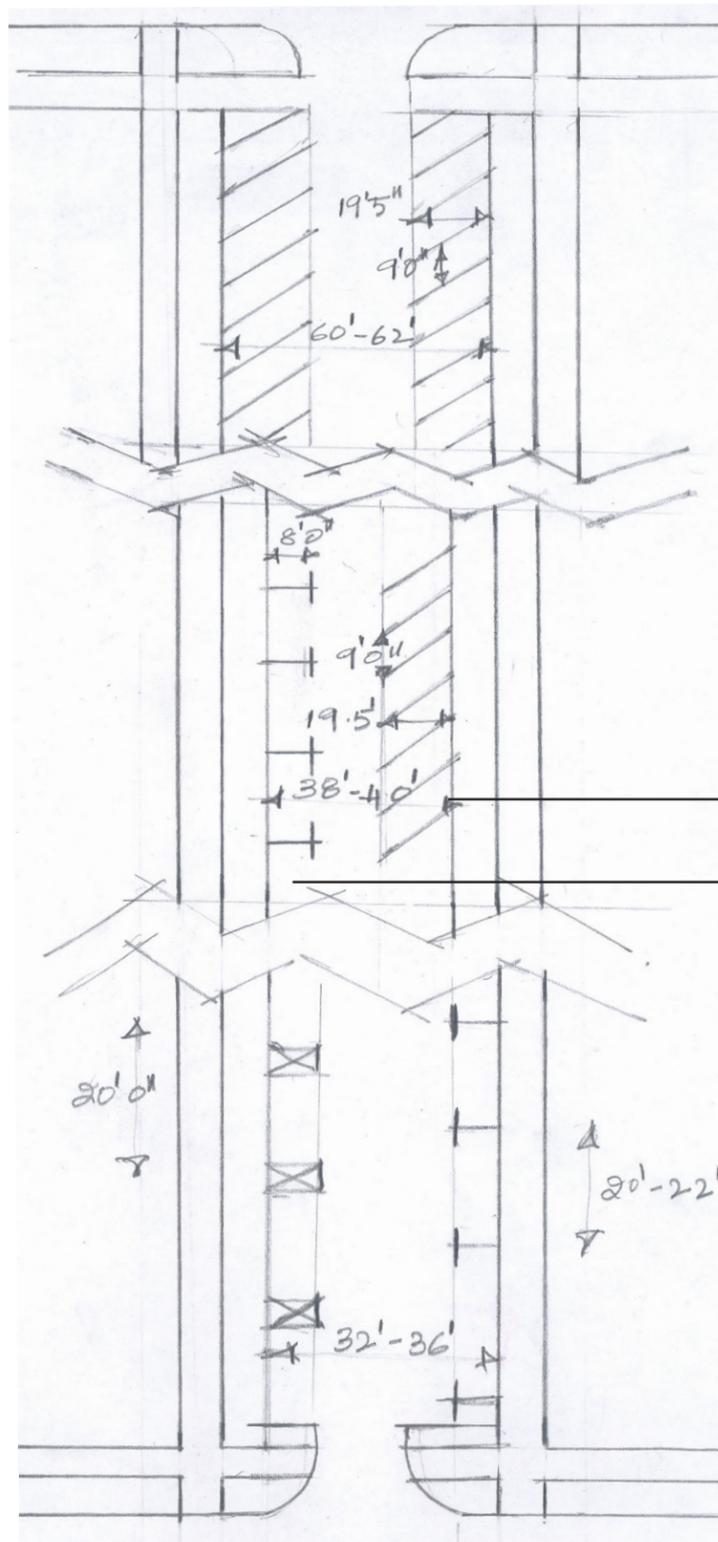
The following street design study contains direct excerpts from the Time Saver Standards For Urban Design, 7.2 - 4 - 7.2 - 7). The notes in Italics and the graphics in black and white are direct excerpts from the Time Saver Standards For Urban Design. The notes in normal font and the graphics in color are my own creation.

On Street parking slows motor vehicle speeds by narrowing the travel lanes. This narrowing is particularly effective because of the height of the parked cars and the articulation (irregular appearance) of the enclosure that the parked cars provide. Further, the occasional parking maneuvers of slowing or stopping cars are a frequent reminder to motorists, of the other users of the street. Beyond its immediate traffic calming effect, on-street parking greatly improves the pedestrian qualities of the street, by putting a barrier of parked cars between the sidewalk and moving vehicles. Pedestrian benefits are increased through the use of bulbouts, which result in more sidewalk space and shorter crosswalks at intersections.

Typical types of on-street parking include parallel parking and diagonal parking. These types may be combined as desired, with parallel and diagonal patterns on opposite sides of the street, or alternating on the same side of the street to create or accentuate lateral shifts.

A desirable complement to on-street parking is the intersection bulbout, which defines and shields the parking, as well as provides a better street corner for pedestrians. Mid-block bulbouts also define the parking areas, as well as provide pedestrian crosswalks, transit stops and places for trees. By regularly placing bulbouts, a continuous street tree appearance can be gained.

Parking along the medians on divided streets is an inexpensive and effective way to reallocate excess pavement width. If only one parking lane can be accommodated along the median, it can be alternated along either side of the median. Though only one row of trees can be accommodated in the median, the appearance of a double row of trees can be created.



View Of On-Street Parking

Diagonal Parking

Parallel Parking

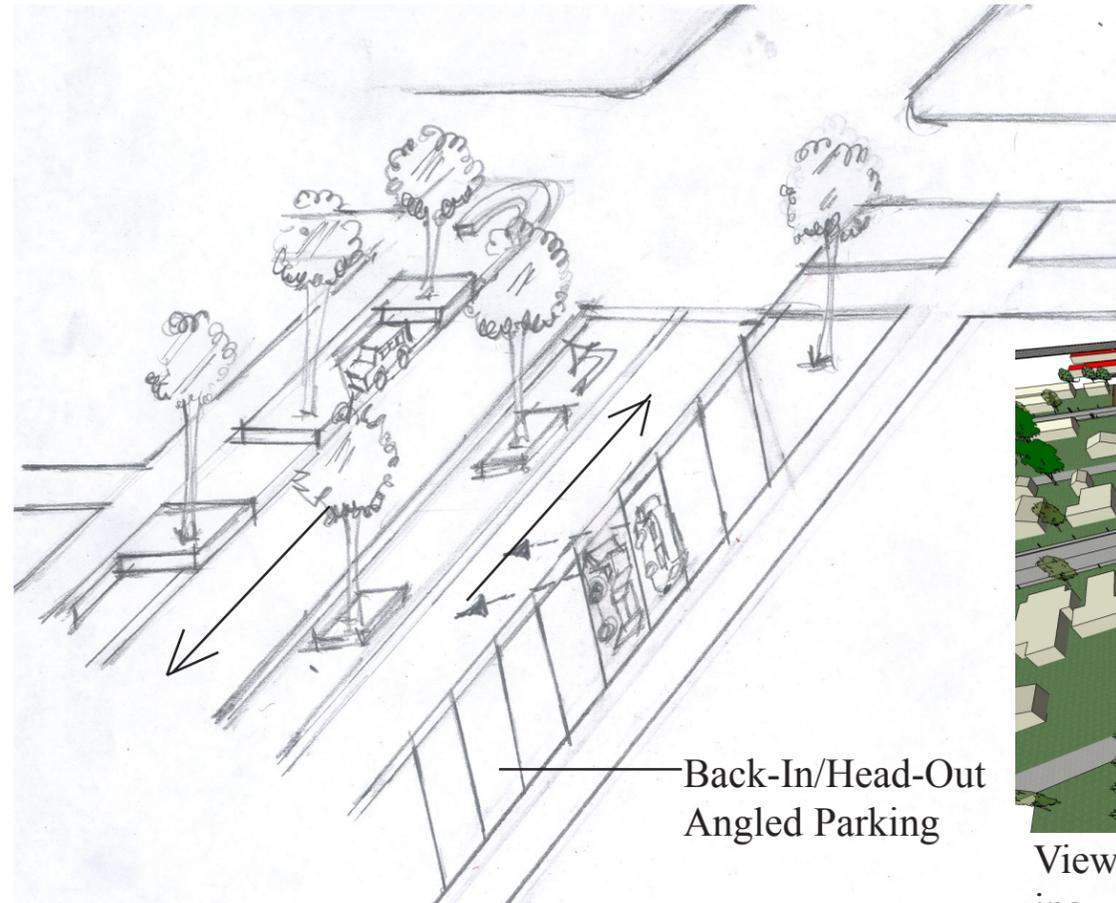


Human Level View Of On-Street Parking



Back-in/head-out Diagonal Parking

“Back-in/head-out” diagonal parking is superior to conventional “head-in/back-out” diagonal parking. Both types of diagonal parking have common dimensions, but the back-in/head-out is superior for safety reasons due to better visibility when leaving. This is particularly important on busy streets or where drivers find their views blocked by large vehicles, tinted windows, etc., in adjacent vehicles in the case of head-in/back-out angled parking. In other words, drivers do not back blindly into an active travel lane. The back-in maneuver is simpler than a parallel parking maneuver. Furthermore, with back-in/head-out parking, the open doors of the parked vehicle block pedestrian access to the travel lane and guide pedestrians to the sidewalk, which is a safety benefit, particularly for children. Further, back-in/head-out parking puts most cargo loading (into trunks, tailgates) on the curb, rather than in the street.

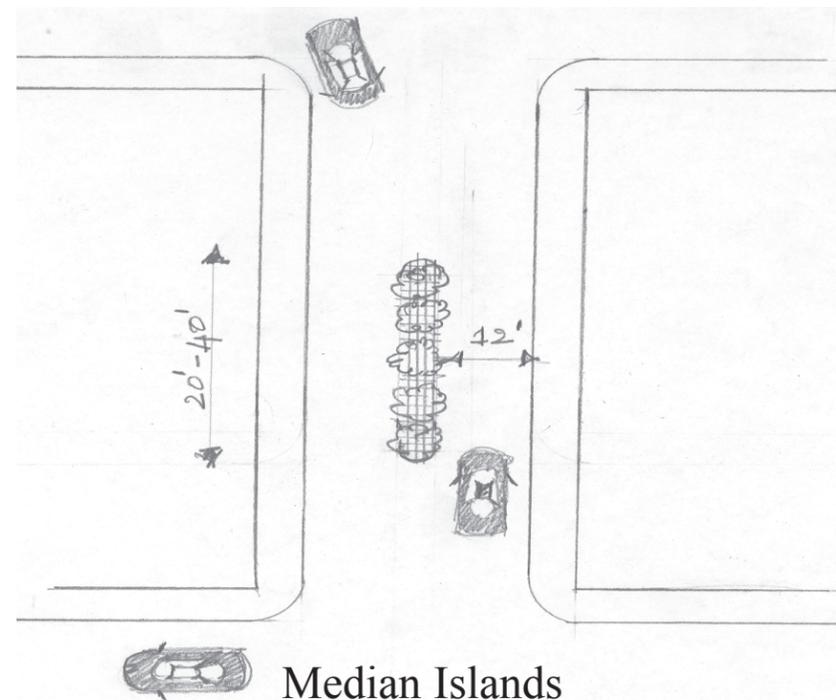


View Of Back-In/Head-Out Angled Parking

Medians

Short sections of the median which do not block side street or property access and which reduce the street cross-section to a single lane in each direction are highly effective traffic calming measure. They narrow the street and, when planted with trees, narrow the apparent width of the street even more. They help discourage over-taking on two-lane streets as well as on streets with center lanes. They also help define shield left-turn lanes. They are also frequently used as pedestrian refuges.

On the other hand, longer sections of median, cutting off access to properties and local streets are not considered traffic calming, but as a means to deny access. Long medians



Median Islands



Median Islands



Street Design

The section of Eleventh Street between St. Louis and Utica Avenues has a traffic count of 17,000 cars per day. The traffic count between St. Louis and Peoria Avenues is quite less with 7000 cars per day. This section of the Eleventh Street does not need traffic calming.

To make the section between St. Louis and Utica Avenues a pedestrian oriented street, traffic calming is a necessity. On street parking can help in reducing parking loads by distributing them and also in traffic calming. The existing four lane street can be reduced to three lanes with a center turn lane. The left over street space can used for creating on-street parking. On-street parking can slow motor vehicle speeds. This inturn will help accomodate higher volumes of traffic on the street, allowing the same number of vehicles to pass the street as in the case of a four lane street. Bulbouts can be used to define the parking areas, as well as a place for trees. The “back - in/head-out” diagonal parking can be used instead of “head-in/back-out” diagonal parking for reasons of safety, better visibility and convenience. A discontinous median can be created, planted with trees with adequate access to properties and local streets. There are two existing bus stops on either side of the street, but for people coming from the east side of the town a bus stop is proposed right across from the clinic. A shading canopy is proposed at all bus stops for waiting passengers.



Site Plan of the Proposed 11th Street Design Between St. Louis And Utica Avenues



Close Up View Of Proposed 11th Street Design



View of Proposed 11th Street Design Between St. Louis And Utica Avenues



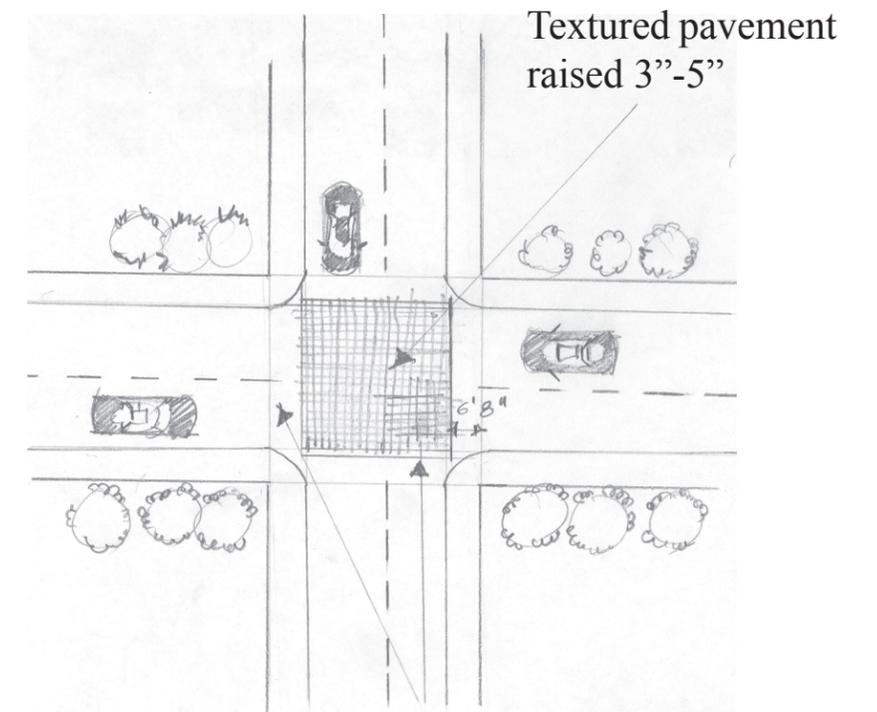
Raised Intersections

Raised intersections involve raising the whole intersection surface to sidewalk height and providing motor vehicle ramps on the approaches. They enjoy the same benefits for pedestrian accommodation as the flat-top speed bumps. They too can be used in conjunction with bulbouts.

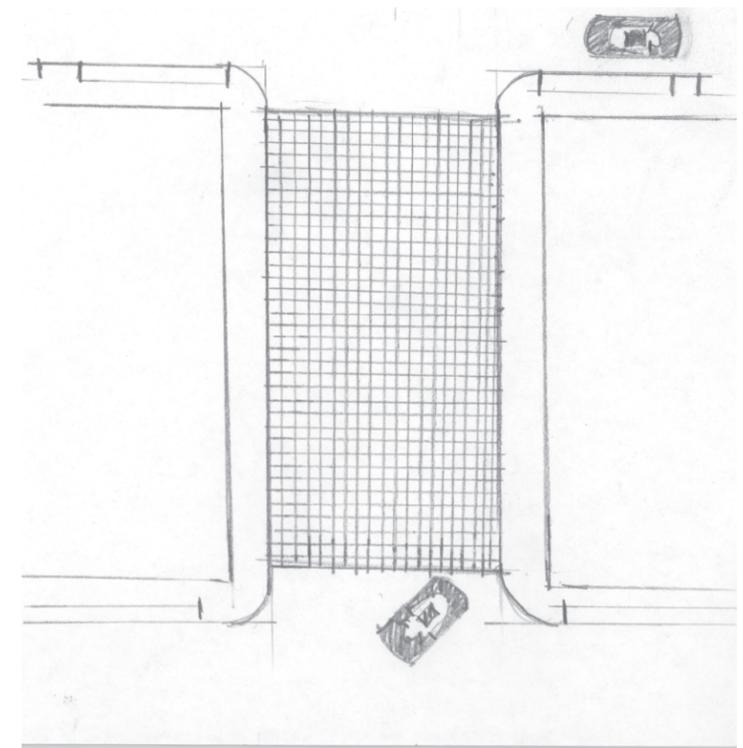
Textured Surfaces

Drivers tend to drive faster on smooth streets than on comparable but rough streets. Changing the texture of the street using bricks, concrete pavers, cobblestones, or stamped pavement, will help drivers slow down. Texture alone will likely be insufficient and can result in increased tire noise. Therefore, it is more effective texture with other traffic calming measures.

Rumble strips should not be used as a traffic calming measure, but rather in their customary role as a warning for something likely to be unexpected by the drivers, such as a T-intersection or a rural stop sign. The noise that they cause is problematical in or near neighborhoods. Further, rumble strips lose their effectiveness when used as traffic calming measures, since they do not compel a reduced speed, and drivers learn to simply ignore them.



Raised Intersections



Textured surface



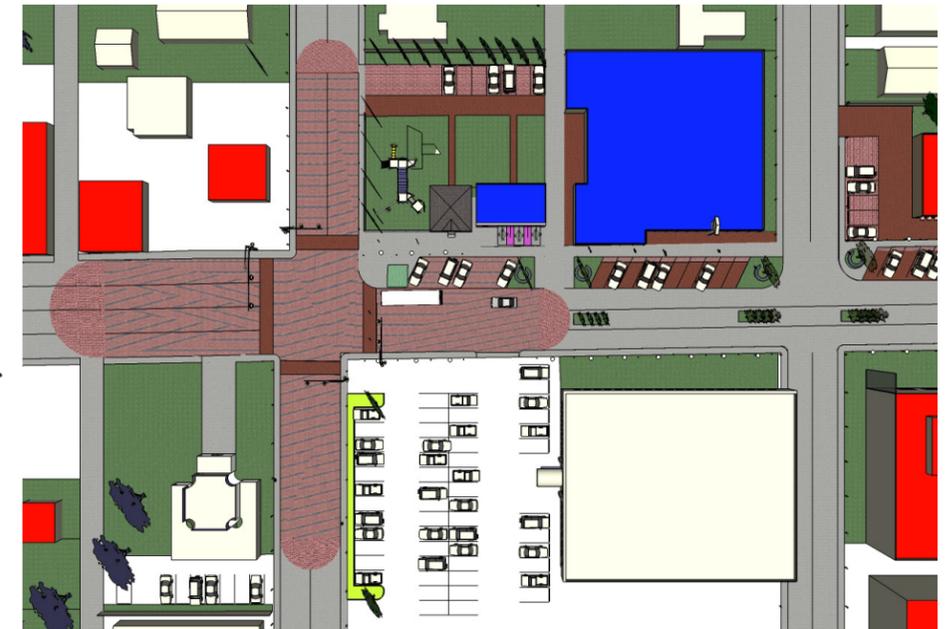
Raised Intersections



Textured surfaces



The main pedestrian crossing from the Family Medicine Clinic to the other side of the street will be located at the intersection of 11th Street and St. Louis Avenue. Changing the texture of the street for a distance of hundred feet using bricks can make drivers drive slower. A gradient of ten inches for hundred feet can make the drivers more conscious while driving on the textured surface. The paving arc can be used as a caution for slow down. As the driver enters the textured surface area, one of the tyres will hit the textured surface before the other. This feature will not be frustrating for drivers as hitting a speed bump, but will serve the purpose of making them aware to slow down further. All of these features can be used at the other pedestrian crossing near the proposed STEP pharmacy to achieve the same effects. These brick patterns break the continuity of asphalt surfaces and will make the the street aesthetically pleasing. While the textured surface, the gradient and the paving arc are precautionary measures, stop lights will ensure pedestrian safety. With pedestrians crossing the street in all four directions at the intersection of St. Louis and Eleventh Street, stop lights have to be installed on all four sides of the intersection.



Plan View Of Intersection Design



View Of Intersection Design



View Of The Paving Arc



Lighting Design

Lighting Design

The following street design study contains direct excerpts from the Time Saver Standards For Urban Design, 7.10-1 - 7.10-8). The notes in Italics and the graphics in black and white are direct excerpts from the Time Saver Standards For Urban Design. The notes in normal font and the graphics in color are my own creation.

The objectives of outdoor lighting design are:

To facilitate the safe movement of pedestrians and vehicles, promoting a more secure environment and to help reveal the salient features of a site by layering the light with soft ambient light and key accent lighting at a desired intensity.

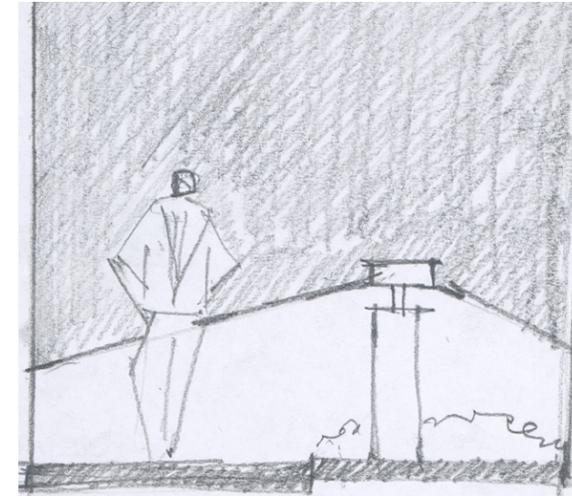
To provide environmentally responsible lighting that does not overlight or produce glare to improve light quality and to minimize light pollution.

Glare is usually caused by uncontrolled light emitted from unshielded lumination. These situations can be easily avoided with proper equipment selection, location, aiming and shielding.

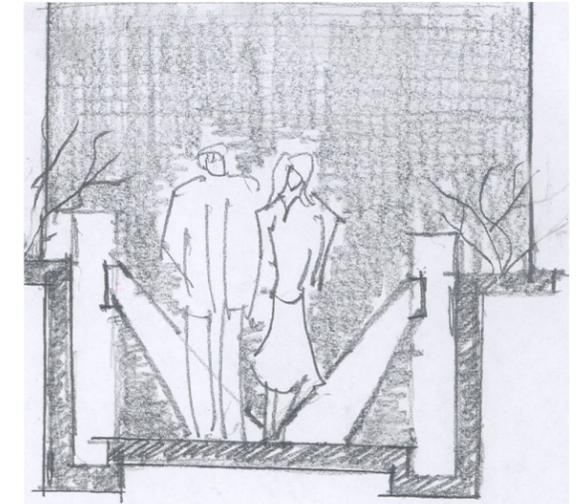
Light source color is another key to low light level visibility. Our night vision is very sensitive to short wavelength light (blue and green light), resulting in crisp and clear vision, especially in our peripheral vision. Reaction time and color recognition under low light levels is far superior with white light sources like metal halide, fluorescent, and inductive lamps.

Safety and security

Lighting can also act as a deterrent by increasing the visibility. Darkeness, together with unfamiliar surroundings, can incite strong feelings of insecurity. To provide a sense of security, possible hiding places and dense shadows should be minimized by placement of appropriate light fixtures.



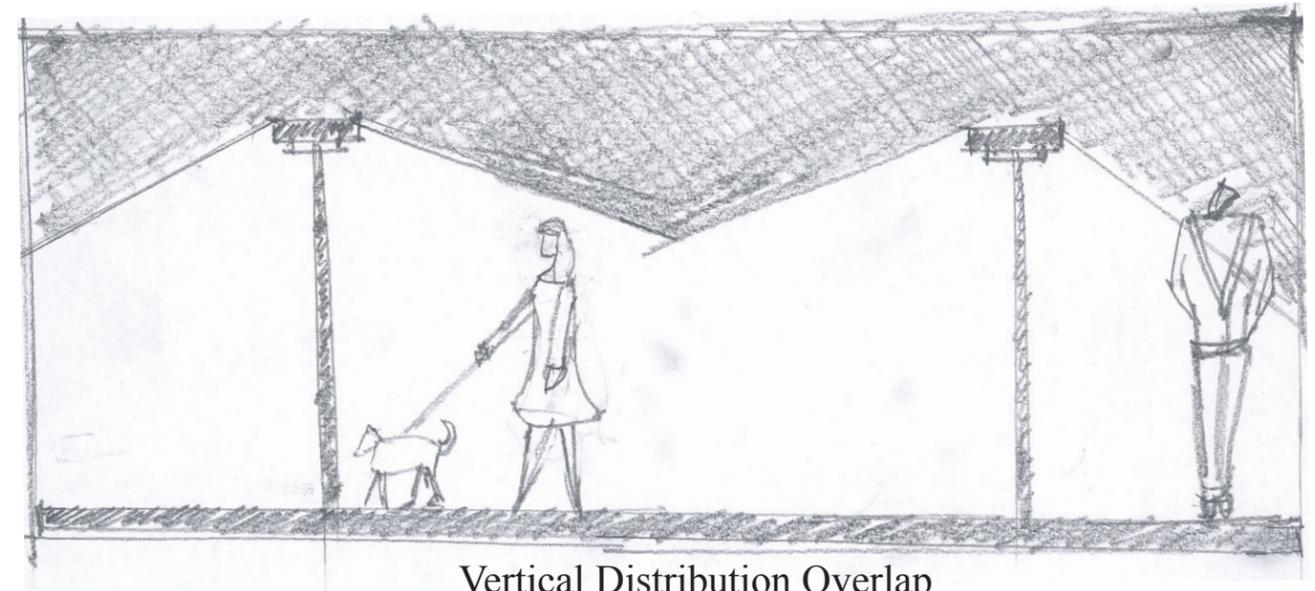
Undesirable



Undesirable

Pedestrian Walkway Lighting

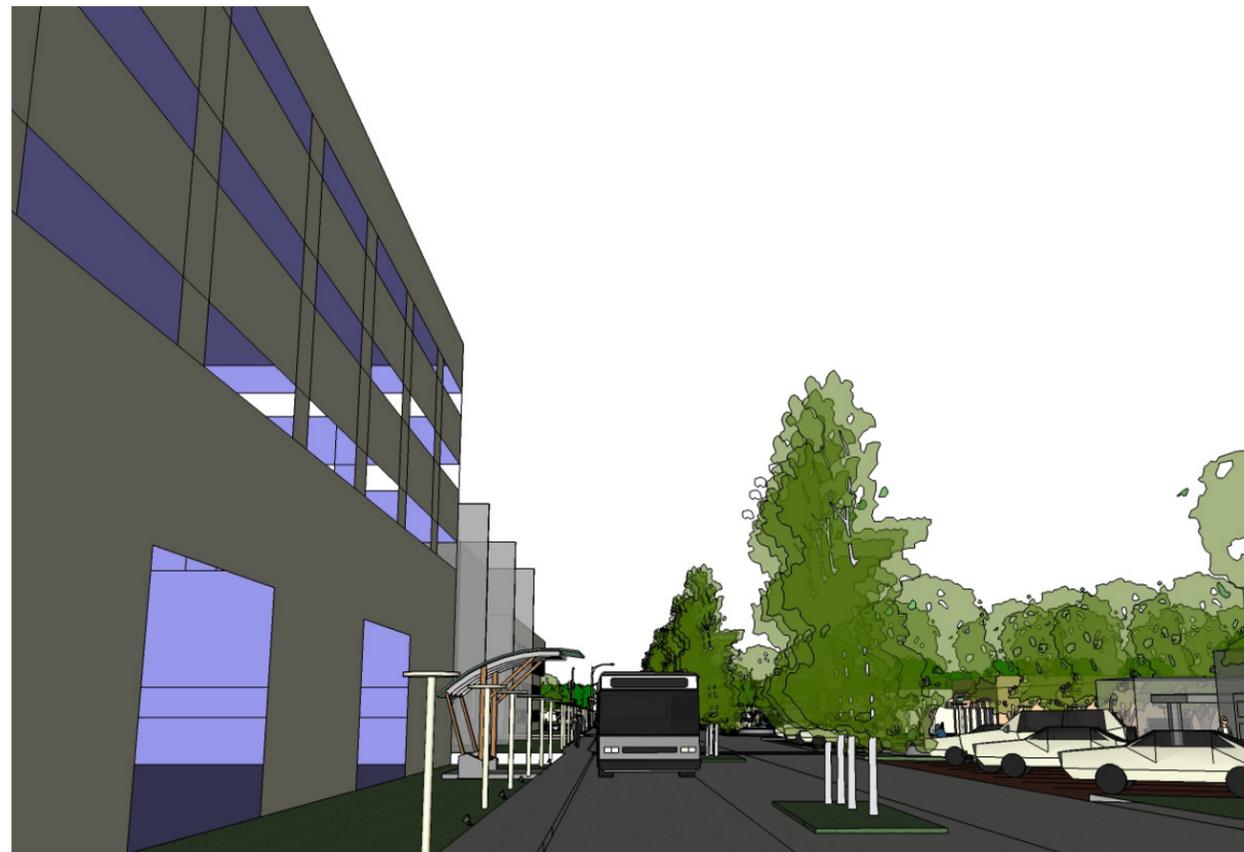
Walkway lights should have enough peripheral distribution to illuminate the immediate surroundings. Vertical light distribution over walkway areas should cover or overlap at a height of 2.13m (7ft.) so that visual recognition of other pedestrians is maintained. When the pedestrian's sense of security is a primary consideration, low mounting height with close spacing and a vertical illumination pattern may be the most effective approach



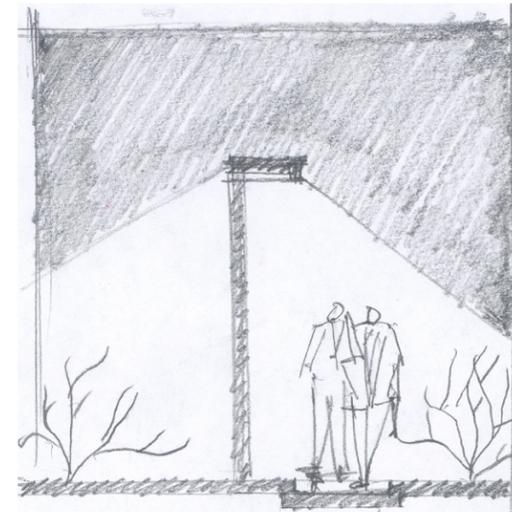
Vertical Distribution Overlap

Surveillance: For surveillance needs, lighting requirements should permit the detection of suspicious movement rather than provide for recognition of definitive details. For the same expenditure of light energy, it is often more effective to light backgrounds, thereby generating silhouettes, than to light the foreground (e.g., lighting the vertical face of a building instead of its horizontal foreground). It is also desirable to highlight entrances and to direct lighting away from points of surveillance.

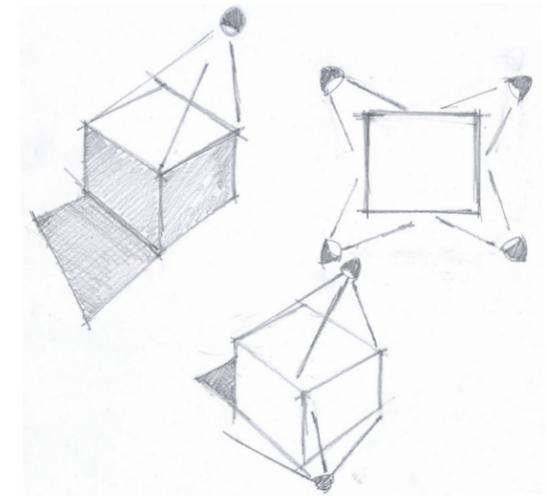
Vandalism: The best way to reduce the vandalism of light fixtures is to use fixtures that are durable enough to withstand abuse, or to place them out of reach. An alternative solution may be to use hardware that is less expensive to replace.



Combination Lighting

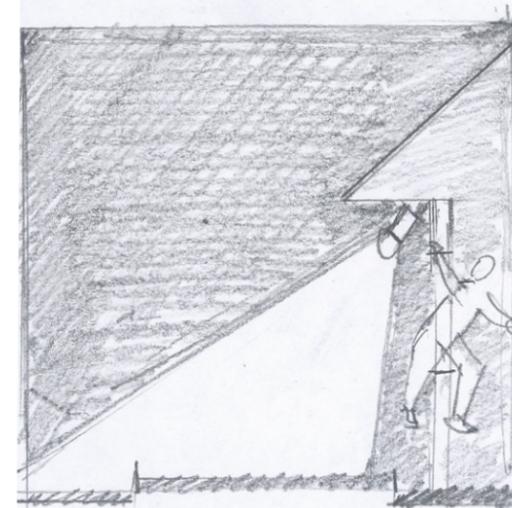


Peripheral Light-

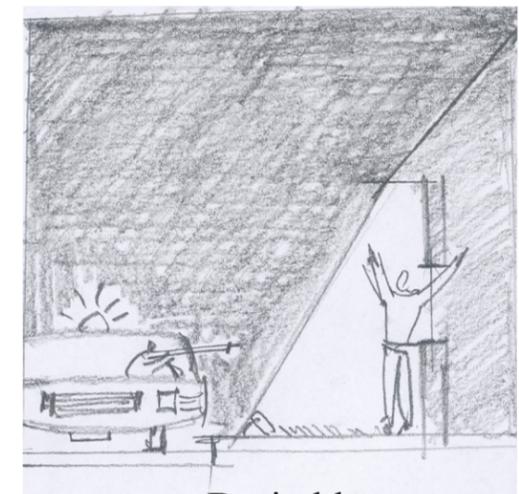


Combination Lighting

Illumination of objects (shape accentuation): The direction of the light source is important for perception of three-dimensional objects. The ability to perceive volumetric form is influenced by the gradient of light and shadow falling on the object. Uniformly distributed, diffused light results in poorly rendered shadows; one must then rely upon outline and color in order to perceive the shape and form of the object. Conversely, a single point source will produce maximum shadows but may also minimize the perception of details. The best way to illuminate standing objects is with a combination of both types of lighting. One source should accentuate shape and form by contrasting the surface with sharp shadows while the other source provide fill-lighting for details.



Undesirable



Desirable

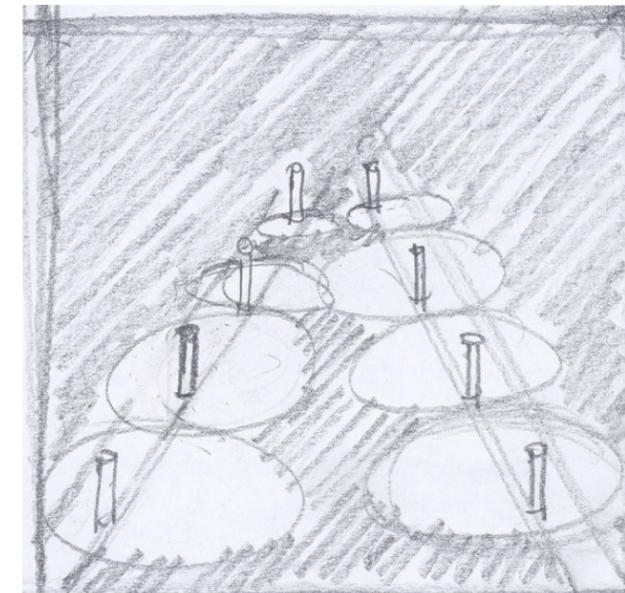


Lighting Hierarchy

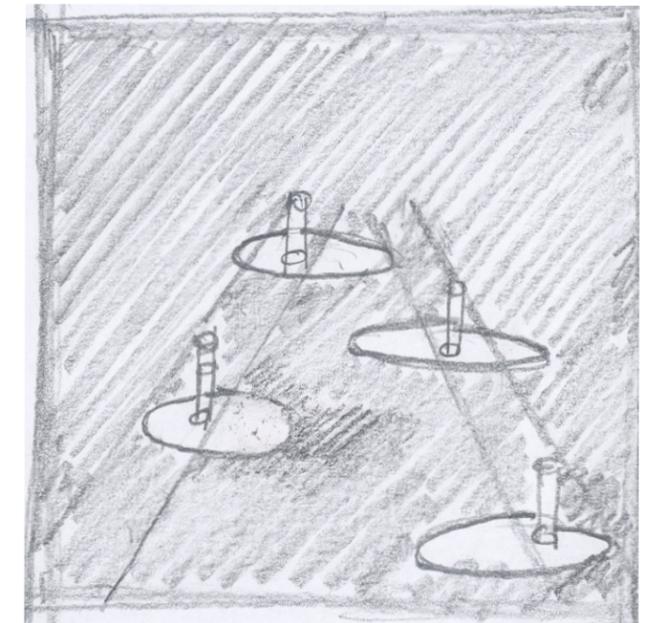
Driver and pedestrian orientation can be aided by providing a hierarchy of lighting effects that correspond to the different zones and uses of a site. For instance, subtle but recognizable distinctions can be made between major and minor roads, paths, and use areas by varying the distribution and brightness of the light and by varying the height, spacing and color of lamps. Attaining high levels of illumination along circulation routes does not have to be a prime consideration in outdoor lighting. If a clear and consistent system is provided low levels may be adequate for safe circulation.

Clear Lighting Patterns

Clear optical guidance can be provided with the alignment of light fixtures positioned in consistent, recognizable, and unambiguous patterns. A staggered layout of road and pathway lights tends to obscure rather than reinforce the direction of circulation and the location of intersections.



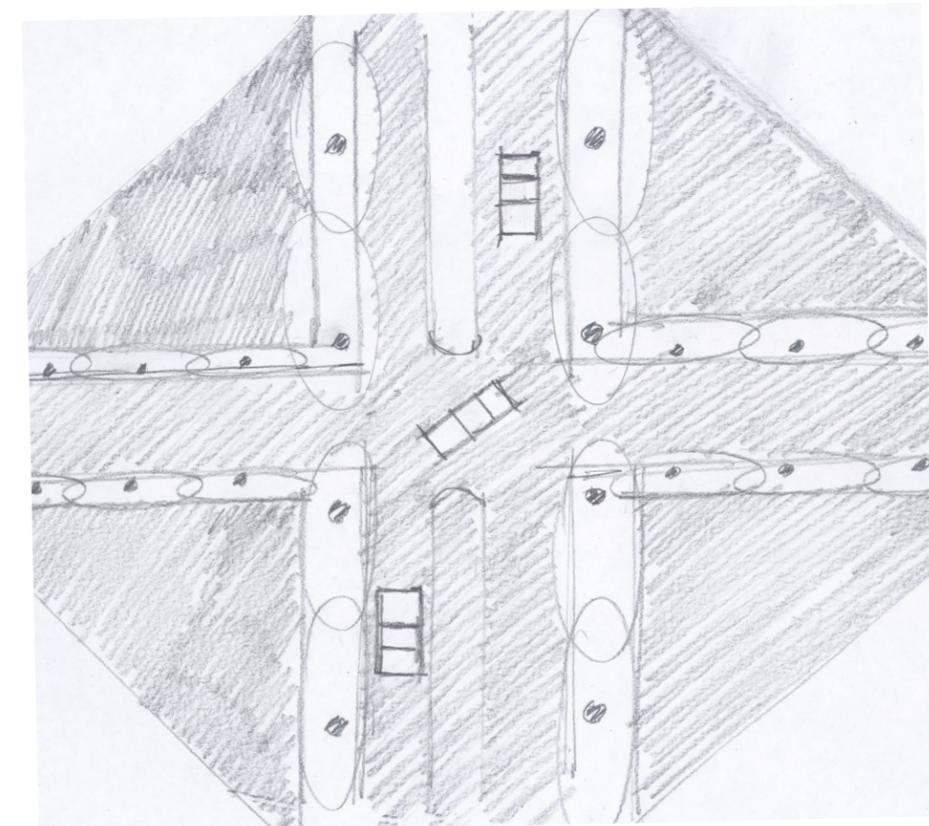
Undesirable



Desirable



Lighting Hierarchy



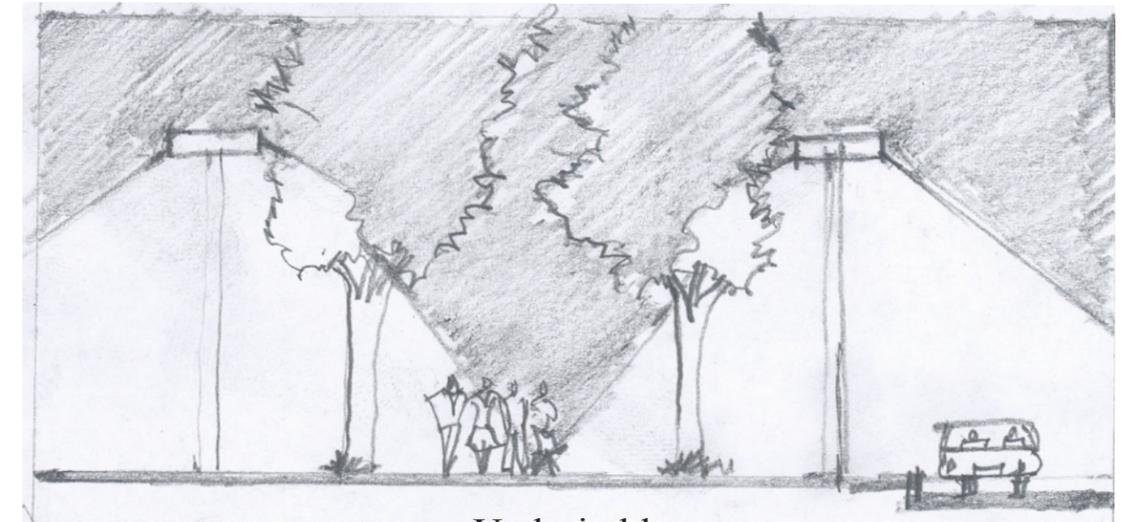
Lighting Hierarchy

Placement of Luminaires

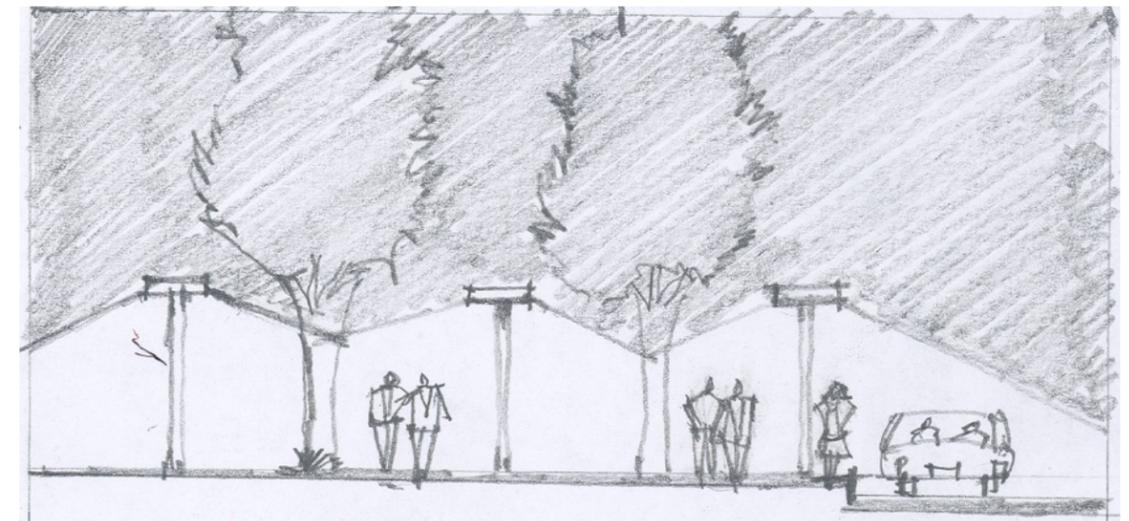
Spacing, height, and distribution of luminaires should avoid foliage shadows, provide uniformity, and vertical surface illumination. High mounting and wide spacing of fixtures may result in disruption to the illumination pattern due to tree shadows. Lower mounting heights and closer spacing between fixtures may create a more uniform distribution of light promoting the pedestrians's sense of security.



Low Mounted and Closer Spaced Light Fixtures



Undesirable



Desirable

Minimizing glare

Glare is major inhibitor of good visibility and can be produced by any scale of luminaire. Glare is produced by bright light sources in your field of view. This may include lamp, reflector or lens brightness. When luminaries are aimed towards you, the glare increases. When luminaries are aimed down, glare is greatly reduced. Luminaire apparent brightness as produced by a lens, can appear too bright if the light source is too powerful. Luminaries with full cut-off distribution aim the light in a downward manner. This distribution type is ideal for area and roadway lighting with higher lumen output. Attention to reducing and eliminating glare helps at the same time to minimizing and eliminating light trespass and night sky pollution.



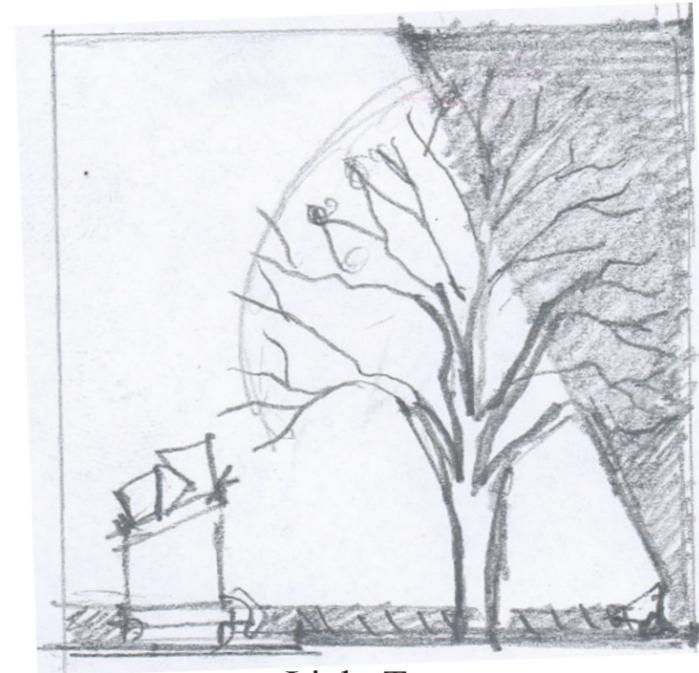
Cut Off Distribution



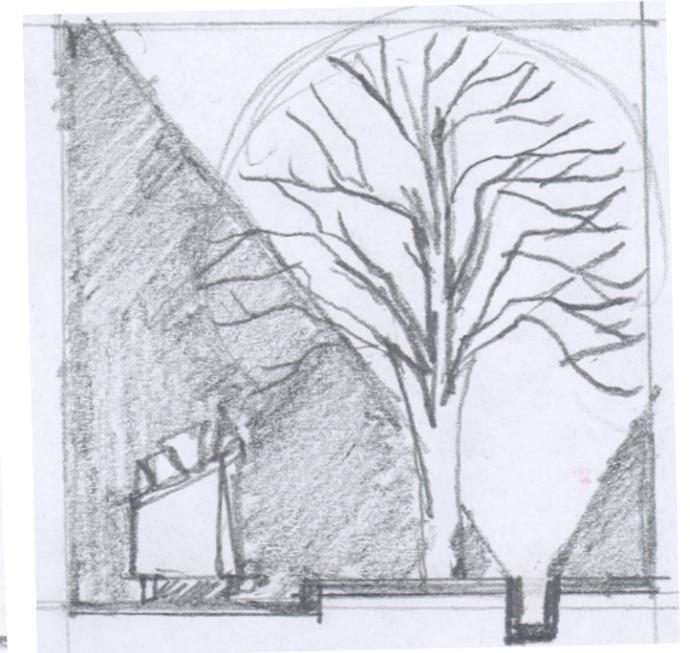
Louvered



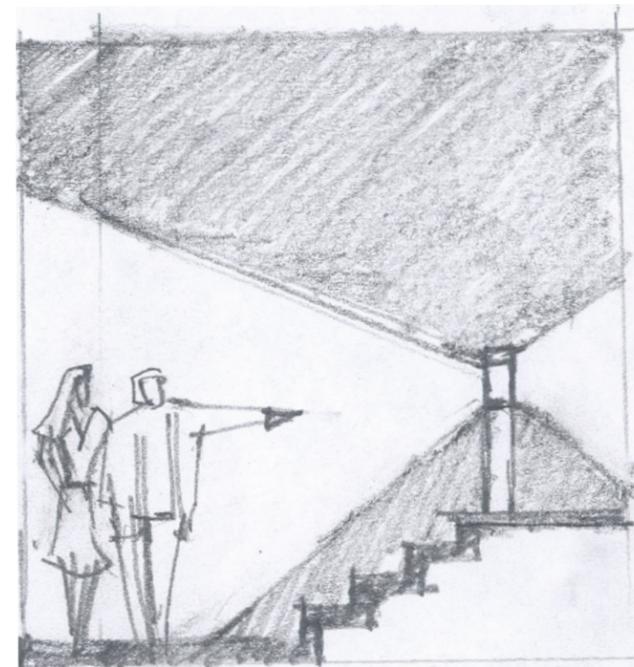
Minimizing And Eliminating Light Trespass And Night Sky Pollution.



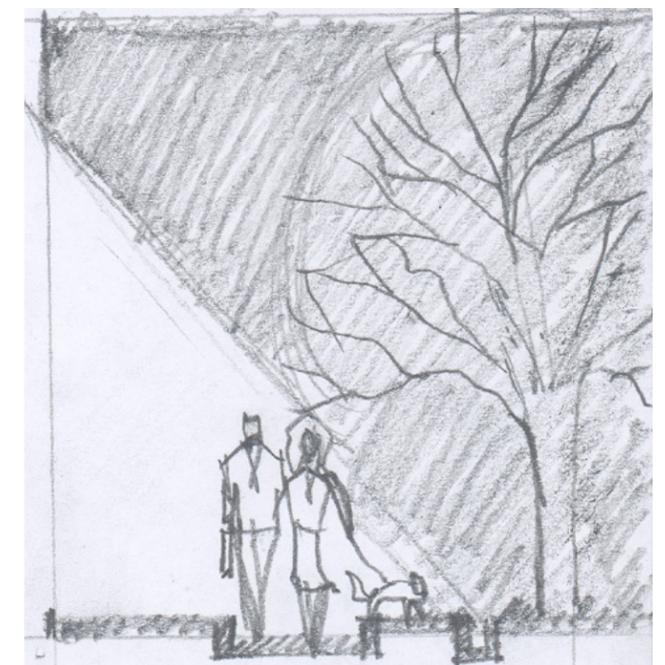
Light Trespass



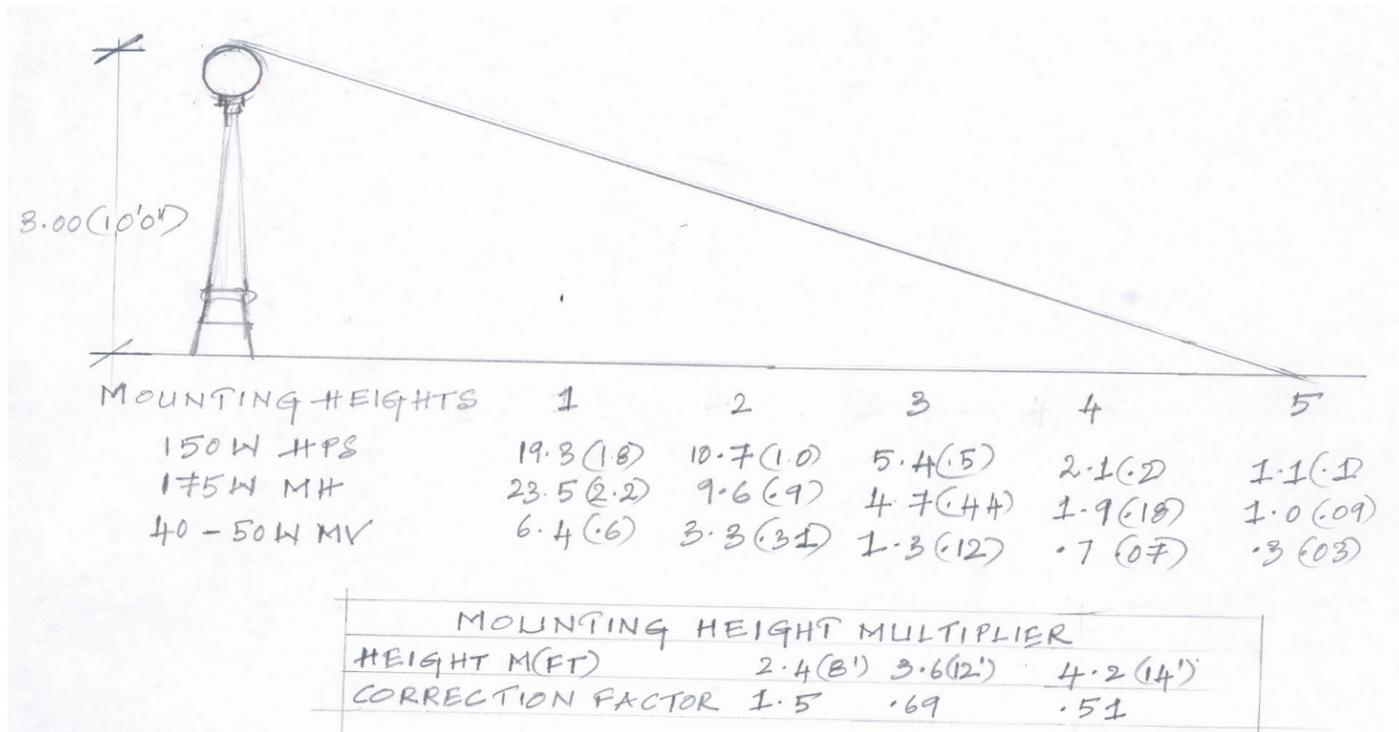
Night Sky Pollution



Glare



Unlouvered



Typical photometric chart for roadway, walkway or area lighting. Lux (footcandle) levels displayed are for a mounting height of 3m (10 ft.). For other mounting heights use the multiplier in the inset. Once minimum illumination levels are identified, fixture spacing is determined by multiplying the number of corresponding mounting heights by two.

TYPICAL PLANE THROUGH WHICH CANDLEPOWER IS MEASURED

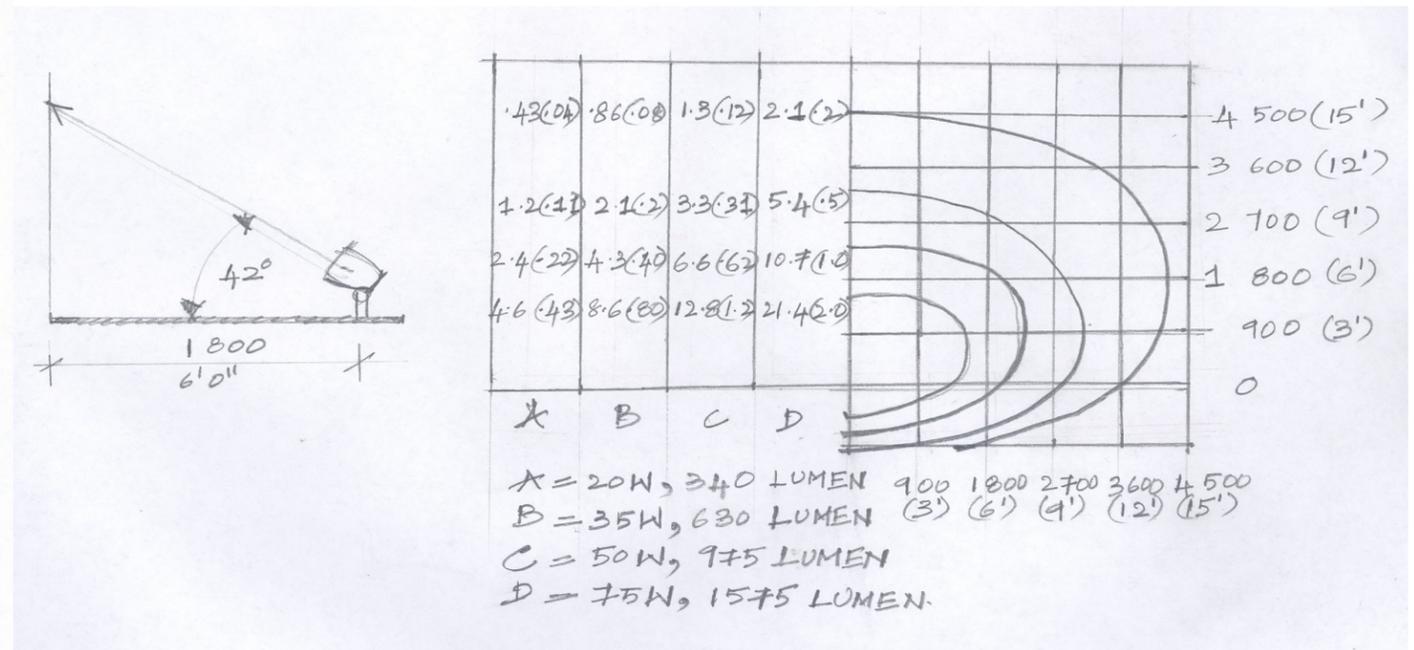
BASIC FORMULA: $FC = CP/FT$ $LUX = CP/M^2$

FC= FOOTCANDLES

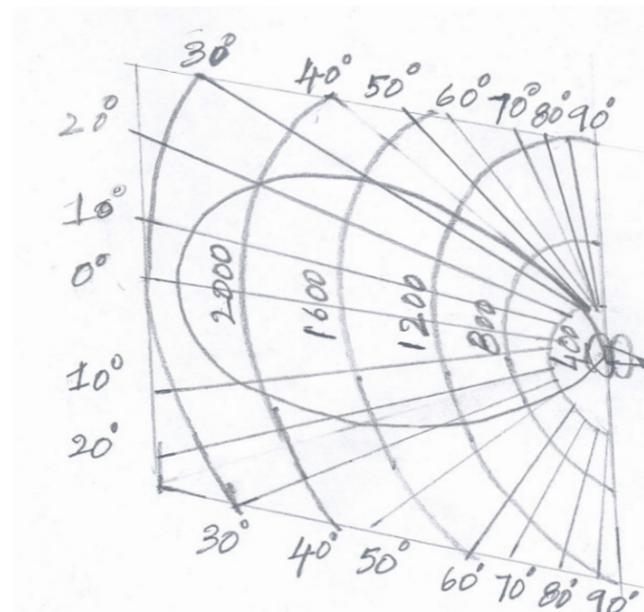
CP= CANDLEPOWER

FT= DISTANCE FROM FIXTURE TO OBJECT IN FT

M= DISTANCE FROM FIXTURE TO OBJECT IN METERS



Typical photometric chart for directional lighting, displayed in lux (footcandles). Illumination levels listed are based on a typical half 42 degree angle



Typical photometric chart for directional lighting, displayed in candela. Maximum candela in this example is at 0 degrees (2,200 candlepowers). Conversion to lux can be calculated by the indicated formula.

Specific Exterior Light Design Criteria

The key to quality exterior lighting is to place light only where it is needed, without causing glare. By not wasting light, smaller lamp wattages can be utilized to achieve superior effects. The most important result is improved visibility. Another by-product is reduced energy usage and improved maintenance. Design criteria include basics such as lighting levels (illuminance), uniformity, and brightness balance (luminance), as well as recommendations for reducing glare, light trespass, and light pollution.

Deciding what to light

In some circumstances, it may be equally as important to determine what not to light as to determine what to light. Light can help guide people through a site or campus. Lighting certain commonly used night-time paths will encourage safe movement from destination to destination. Other areas can be left dark to discourage use. It is important to provide smooth transition between lighted areas and nonlighted areas.

Orientation

One purpose of outdoor lighting is way finding. As motorists and pedestrians weave their way throughout our nighttime built environment, lighting can help orient, guide and aid in visual tasks.

Layers of Light

Outdoor environments that require lighting should be softly lighted to provide a pleasant ambient level. Overlighting should be avoided since it creates an imbalance between a site and adjacent streets and properties. Additional accent and task lighting can be added to guide people through an area and add visual interest.



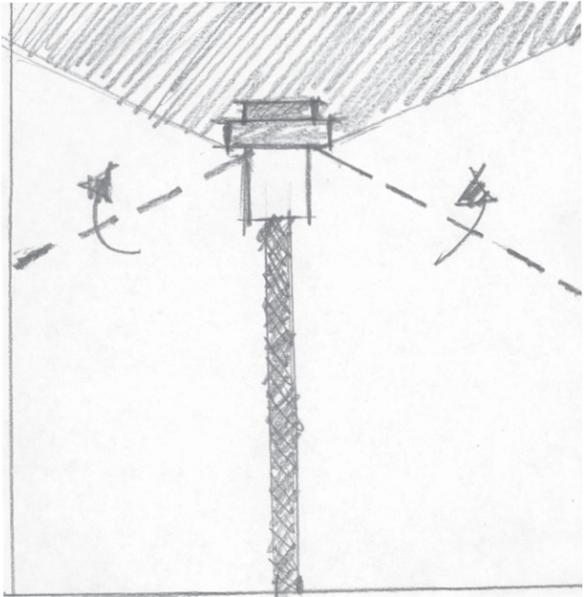
Placing Lights Only Where It Is Needed



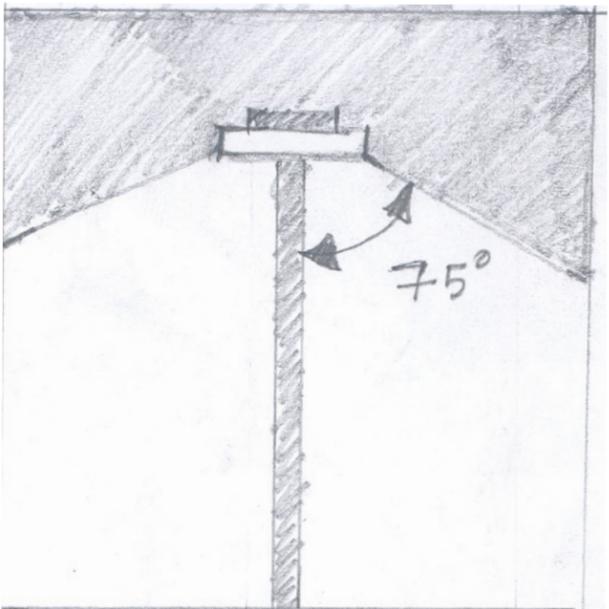
Layers Of Light



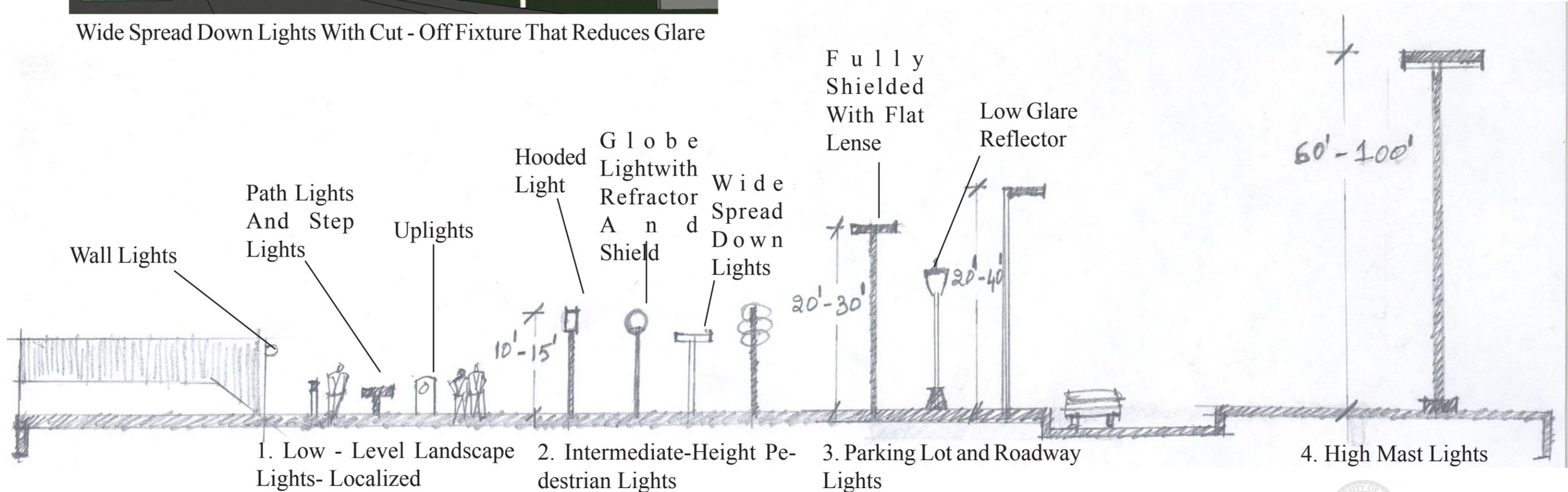
Wide Spread Down Lights With Cut - Off Fixture That Reduces Glare



Standard Street Fixture With High Angle Illumination



Cut - Off Fixture That Reduces Glare

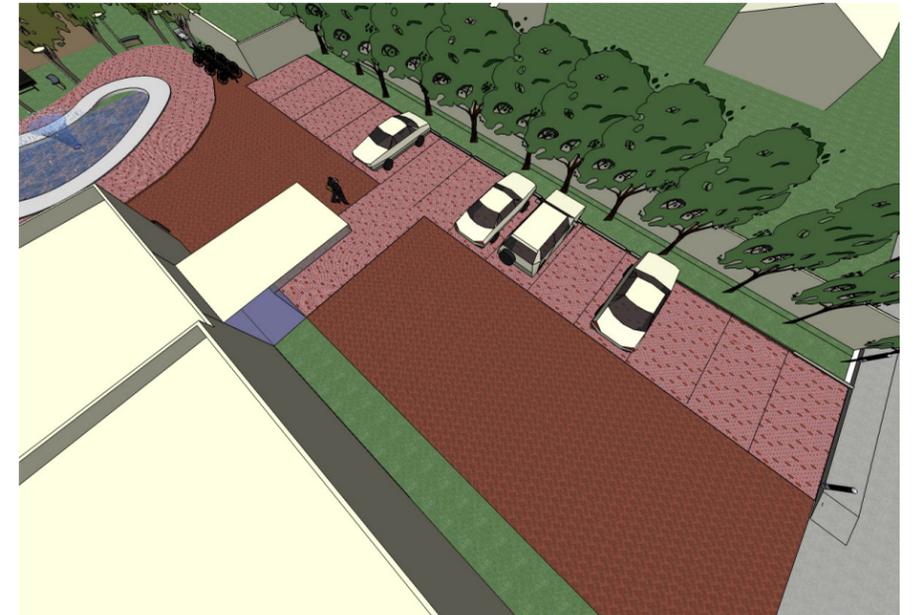


Paving Design

Paving Materials

One way of decreasing the storm water impacts of paving is to make the pavement more permeable so that infiltration occurs through the surface of the paving itself. For more aesthetic appeal a potential permeable surface uses unit pavers (pavers set as individual pieces, rather than a continuous sheet like poured concrete). They must be laid on sand, crushed stone, stone screenings, or some other permeable material. Because the percolation actually takes place in the joints between the pavers, the width and material of the joints is critical.

Conventional parking lots are a major contributor to the heat increases from paving. There are two ways of reducing the heat increases from paving. The first is to plant shade trees. The second approach is to increase the reflectivity of pavement and thus reduce its heat absorption capacity. Asphalt can be lightened in several ways. One is to specify that the mix include light colored stone, both aggregate and fines. Color coating asphalt developed in large part as a decorative system but has promising environmental possibilities. These can give asphalt a surface of almost any color, and when light colors are used, they will make paving less heat-absorptive. (Time Saver Standards For Urban Design, 7.4-5 - 7.4-6)



Unit Pavers



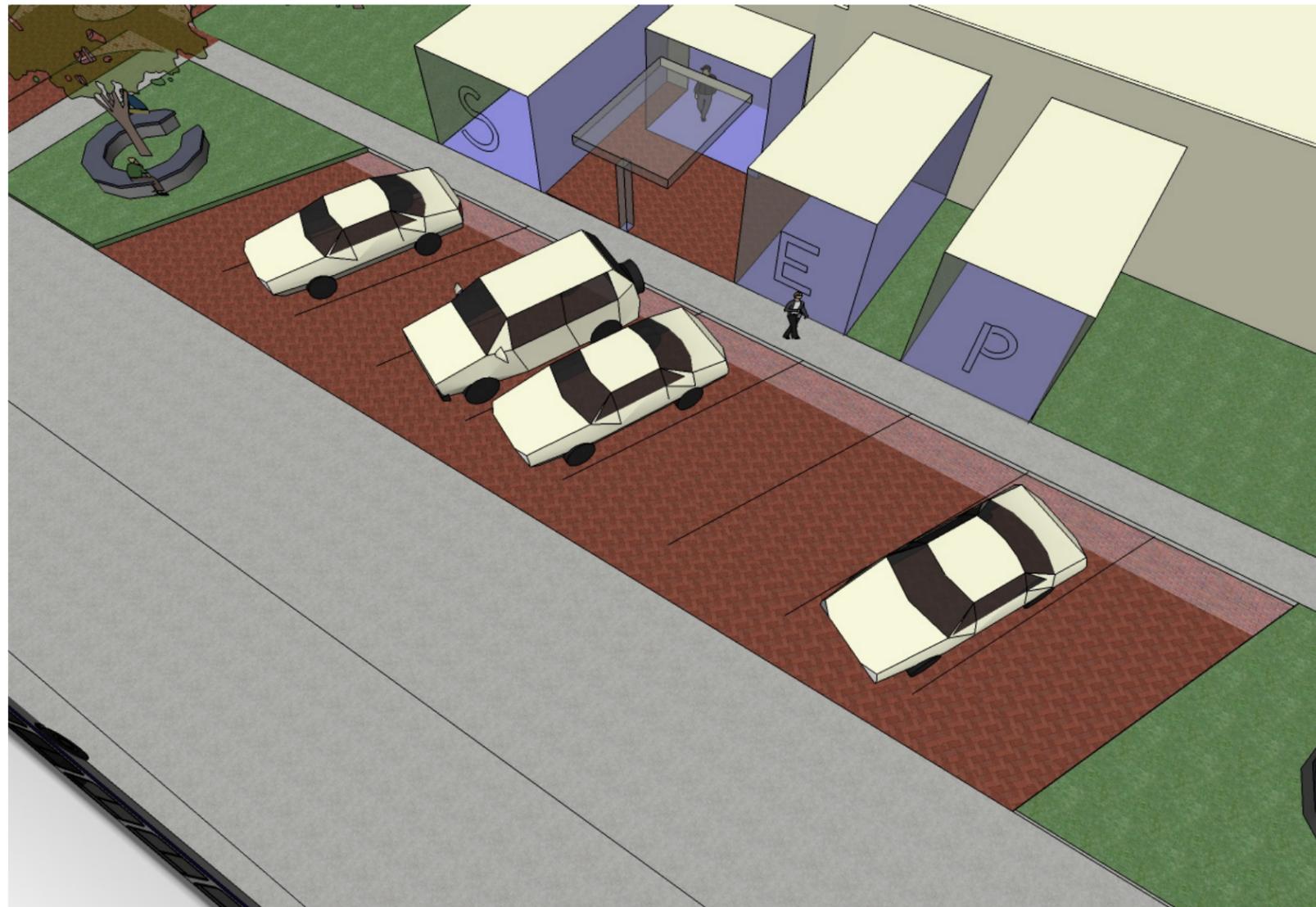
Reducing Heat Increase From Paving With Shade Trees



Light Colored Reflective Asphalt Surfaces With Adequate Landscaping



A different color for the paving surface within the parking lots can help drivers distinguish between the driveway and the actual parking slots in a glance. As the driver enters the parking lot the difference in texture of the surface will make him slow down. When it comes to on-street parking a difference in color and texture at the end of the parking slot will make a driver aware about the left over distance in the parking slot. This feature will make pedestrians on the sidewalk less conscious of vehicles backing up. The change in texture and color can vary for various uses depending on safety and convenience of both pedestrians and vehicle drivers. While very porous paving materials can forcibly slow down vehicles, it is best to make drivers aware of the situation by subtle changes in color and texture.



Difference In Color And Texture At The End Of The Parking Slot



Changes In Texture and Color Within The Parking Lot



Plan Showing Changes In Texture and Color Of Paving Surfaces

Conclusion

The main objective of my design has been creating a desirable environment in which to live, work and play. The STEP Pharmacy along with other future proposals may bring in some change to this section of town. The project is not just about the STEP Pharmacy. For this area of town to be really a place to live, work and play all the elements of design from lighting, to streets and paving have to be looked into. It is only then that this place can show its true potential. The Family Medicine Clinic being a community service oriented institution can better serve its patients with its community outreach programs if they are communicated well. The display panels are an example to improve communication with the target population. The display panels are not the only way. The area around the fountain can be an informal meeting place for a variety of groups for carrying out clinic programs. There can be other design proposals which can be further thought about for such activities. With healthy eating and exercise being a major part of the clinic's program, the restaurants and places to eat can propagate the idea through their menu and structure, that this is a place where one can come more regularly for eating healthy and staying fit.

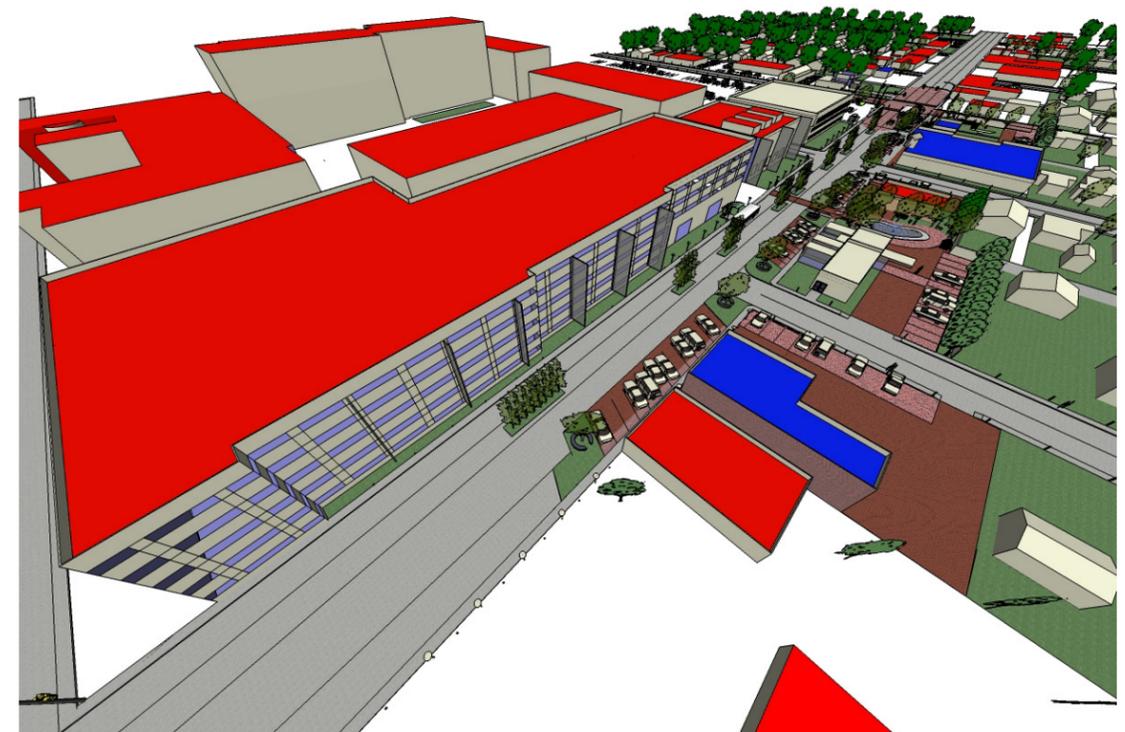
A busy pedestrian street can also bring down the crime rate. This plan can be an example to the surrounding neighborhoods in creating surroundings that are safer, walkable and with places to shop, eat and relax. The intentions of people doing these developmental projects should not be to wipe out poorer classes of people to replace them with richer classes. There should be a plan for everyone. Education can be the best way to achieve these goals. When healthy eating and good practices are taught and propagated on a regular basis, it will create long term impacts on people living around. Over a period of time people will realize that it is they who benefit from all of these programs, thus winning their trust and enthusiasm for further projects by the Family Medicine Clinic.

Walkability and easy accessibility is the key to the success of this project. It is when people realize that this place can be reached by foot, and that they can benefit from this project in some way or other, that this whole project can be a huge success.

The Family Medicine Clinic can develop other community outreach programs which may have their offices in this location. While these facilities attract a lot of people with various needs, they may run into other issues they may be interested in. The success of the project is partly in starting a pharmacy, but more in attracting other facilities into the existing Eleventh Street buildings which can help further in implementing unique ideas of street, lighting and paving designs.



Proposed Urban Design Plans For 11th Street



STEP Pharmacy

Existing buildings from the past can be added to with new features that are a reflection of people's thoughts in the present times. This combination can be propagated to other sections of Route 66 which are undertaking renovation projects. There are a lot of things attached to a project other than the building itself. A place cannot be walkable just because of one pretty building. It can be if there are urban design motives attached to it.

Spreading out the uses can help in designing public spaces against building a massive building which is a localized setup. Not only are older historic buildings preserved, but there can be independent spaces for various uses and scope for creative design. The Family Medicine Clinic could have been spread out, with some of the shop fronts as individual spaces for doctors and medical professionals. Parking can be designed this way too. Instead of massive structured parking, each facility can have smaller parking units. As the need grows more spaces can be added. These kinds of planned units will not have drastic effects, for instance wiping out a neighborhood for building a parking garage for a massive building. There are lots of store fronts west of the Family Medicine Clinic which can be carefully planned to suit the needs of various institutions apart from clinic itself.

The whole process of designing the STEP Pharmacy has been incremental. First it was the design of the building itself, then there were other facilities needed by the clinic, which were proposed into the existing buildings across from the clinic with few additions. Instead of a methodical or a rational approach, I went step by step in putting these facilities into the existing buildings and that created a whole street with need for more planning in terms of traffic calming and making it a place where people can walk, live and relax. Taking a Utopian idea as proposed by Dr. Steve Miexel and dealing with it in a rational way could have ended up in a completely different design. It could have been an "Art Deco" street from the past, but my whole idea throughout the process is to use what is existing, add what is needed and create something that is functional and beautiful which will benefit one and all.



Proposed Section Of Eleventh Street



Scope for Rehabilitation Projects On the Western Section Of Eleventh Street



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STEP Pharmacy

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Future Proposals

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STEP Pharmacy



With Friends At The Tulsa Run , 2006



With Buddies from TU



I wish to dedicate this project to my mom and dad who always gave me the best of everything. My sincere thanks to the Director of the Urban Design Studio, University of Oklahoma Prof. Shawn Schaefer. I would like to thank President Clancy, Dr. Steve Meixel, Dr. Jonathan Ference, Janet Gaskins, Linda Johnston and all those who helped me in this project.

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