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File 1985-0024 Project Name Little Bookcliff CMI Housing Unit – Final Plan

Present	Scanned	
		A few items are denoted with an asterisk (*), which means they are to be scanned for permanent record on the in some instances, not all entries designated to be scanned by the department are present in the file. There are also documents specific to certain files, not found on the standard list. For this reason, a checklist has been provided. **Remaining items, (not selected for scanning), will be marked present on the checklist. This index can serve as a quick guide for the contents of each file.** **Files denoted with (**) are to be located using the ISYS Query System. Planning Clearance will need to be typed in full, as well as other entries such as Ordinances, Resolutions, Board of Appeals, and etc.**
X	X	**Table of Contents**
X	X	**Review Sheet Summary**
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		***Staff Reports**
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		***City Council staff report and exhibits**
		***Summary sheet of final conditions**
		***Letters and correspondence dated after the date of final approval (pertaining to change in conditions or expiration date)**

DOCUMENTS SPECIFIC TO THIS DEVELOPMENT FILE:

X	X	Action Sheet	X	X	Letter from Don Newton, City Engineer to Dan Larson Roubal & Assoc. re: drainage study – 1/29/86
X	X	Review Sheet Summary	X		Certification of Plat – 1/15/86
X		Review Sheets	X		Record of Final Plat & Plan Recording – 10/7/86
X	X	Development Summary			Letter from Don Newton to George Trosky, IAI Lescher and Mahoney re: sewer extension of water and sewer mains– 4/15/87
X	X	Planning Commission Minutes - ** - 9/24/85	X		Handwritten notes to file – 12/23/85
X	X	Site Plan	X	X	Letter from John Baldi to Mike Sutherland re: installation of sod- 7/13/87
X		Receipt for Treasurer's Certificate of Taxes Due– 8/29/85	X	X	Letter from Don Newton to George Trosky, Lescher and Mahoney re: completion of final inspection – 9/3/87
X	X	Letter from Stephen Be, CO West Regional Mental Health Center to Lorin Hunt, Dept. of Housing and Urban Dev. re: proposing 18 parking spaces per 20 unit project as opposed to 1 1/2 spaces required – 2/1/85	X		Landscaping Plan
X		Gamma Radiation Survey Form	X		Boundary and Topography Map
X		Improvements Agreement– (tabulations but not signed or dated)			
X		Contract to buy and sell real estate			
X		Letter from Don Warner, Planner to Paul Malinowski, HUD re: project not in flood plain – 12/16/85			

Project Narrative

Form B

The proposed project will be a 20-unit rental housing development for the mentally ill. All twenty units will be self-contained, independent living units with their own kitchens and bathrooms. This is not a group home living arrangement.

The clientele will be composed of low and moderate-income, mentally ill individuals who do not need any form of institutionalization but need a minimal amount of supervision to assist them in being integrated back into society. Each tenant will receive daily counseling from the Colorado West Regional Mental Health Center either on-site or at Colorado West's main office in downtown Grand Junction. In addition, one of the 20 units has been set aside as a resident manager's apartment. Although three of the remaining 19 units will be two-bedroom units (the other 16 are one-bedroom units), it is assumed that all of the units will house single individuals with maybe one or two couples and very few, if any, families.

The project sponsors are Health Services Programs, Inc., and Colorado West Regional Mental Health Center. Both agencies are IRS-approved non-profit agencies with the home office in Glenwood Springs. However, both have strong, local, Mesa County affiliates and a number of members of the local community on their boards. Colorado West has been in existence since 1972 serving the treatment needs of the mentally ill while Health Services Programs, Inc. (HSP) was founded last year as a loose subsidiary of Colorado West specifically to develop this project. HSP was capitalized by Colorado West.

The petitioner's representative is the Grand Junction Housing Authority. The Housing Authority is serving as the project consultant and has used its experience in developing low-income housing to secure the financing and architectural/ contracting services. In addition, the Housing Authority will be the managing agent. Projects developed and managed by the Housing Authority include Walnut Park (elderly and handicapped) at Walnut and 17th Sts., Grand Junction, family housing at 11th and Bookcliff, Grand Junction, and Ratekin Tower (elderly and handicapped), 8th & Main, Grand Junction.

A conditional commitment for financing has been secured from the U.S. Department of Housing and Urban Development (HUD) for approximately $800,000. In addition, a grant was secured from the Colorado Division of Housing for $60,000 for this project. A firm commitment is expected later this year or early next year.

Construction will begin approximately March, 1986 and be done in one phase. Construction completion and occupancy should commence approximately December, 1986.

The land, a tract of 35,000 square feet near the intersection of Little Bookcliff and Wellington Avenues, Grand Junction, is currently under option until December 1, 1985. If closing does not occur before that date (not likely), the sponsor will either negotiate an option extension (currently being negotiated) or secure short-term acquisition financing.

Some off-site improvements will be necessary, including extension of Little Bookcliff Avenue to the property line. Although our drawings show the road extension, it will be the seller's responsibility to design and pay for all public right-of-way improvements per the option agreement (Contingency #h of Addendum "A"). The firm of Tom Rolland has submitted estimated off-site costs for this packet (please see form M).

As part of the development, we are requesting that the 30' easement on the west side of the property be vacated as noted on the site plan. There are no existing utilities in this easement. Any future utility lines could be run in the existing pedestrian public right-of-way adjacent to the west end of the property. This right-of-way includes a utility easement.

The tract is situated among medium density office and residential multi-family uses. To the west are three Wellington office buildings and La Villa Grande Nursing Center. To the south is Monterey Park, a 170-unit housing development for senior citizens and the medical office of Dr. Stephen Axthelm, et al. To the east is Wellington IV office building, a 24-unit multi-family development, and the Village Fair Shopping Center. To the north are medical facilities of Hilltop Rehabilitation Hospital as well as a number of multi-family housing developments, including the Greenhouse Apartments, the Loft Apartments, and various others. This unique blend of land uses lends itself perfectly to this type of project. In fact, it should be pointed out that this development will be located in proximity to the site of the psychiatric hospital proposed by St. Mary's Hospital. It should also be pointed out that neither HSP nor Colorado West has any ties whatsoever to the Glenwood Springs firm currently competing with St. Mary's for the psychiatric hospital. Adjacent zoning is appropriate to these uses and our proposed use.

The project will be landscaped as shown on the project drawings. Landscaping will be relatively low maintenance in that there is not a tremendously large area of open space (although more than adequate for this project) and will be completely covered by a sprinkler system. Maintenance of this system will be done by the Grand Junction Housing Authority as management agent.

It is anticipated that very little traffic will be generated by this project. In fact, we are requesting a waiver of the parking requirement because of the lack of vehicles owned and operated by this clientele. A letter attached to the packet from Colorado West indicates that very, very few of these clients own and operate vehicles. Transportation will be provided by a van currently owned and operated by Colorado West. The amount of spaces proposed is almost a 1:1 ratio and will probably result in 2/3 of the lot being unused, even during peak hours of visiting.

The Little Bookcliff Avenue public right-of-way currently ends near La Villa Grande Nursing Center. Our proposed development would require approximately a 230' extension of this right-of-way to the southwest corner of our property. There currently is a 20' pedestrian right-of-way where the proposed road would be. Thus, we would be rededicating the previously vacated public right-of-way (Book 1507, page 364). See Site Plan for actual locations.

We would be very happy to go into detail you may require on any other aspect of this project.

(H)

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Grand Junction, Colorado
81506

Lester Duncan, M.D.
790 Wellington
Grand Junction, Colorado
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Health Services Program
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Glenwood Springs, CO
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Grand Junction Housing
Authority
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Grand Junction, CO 81501

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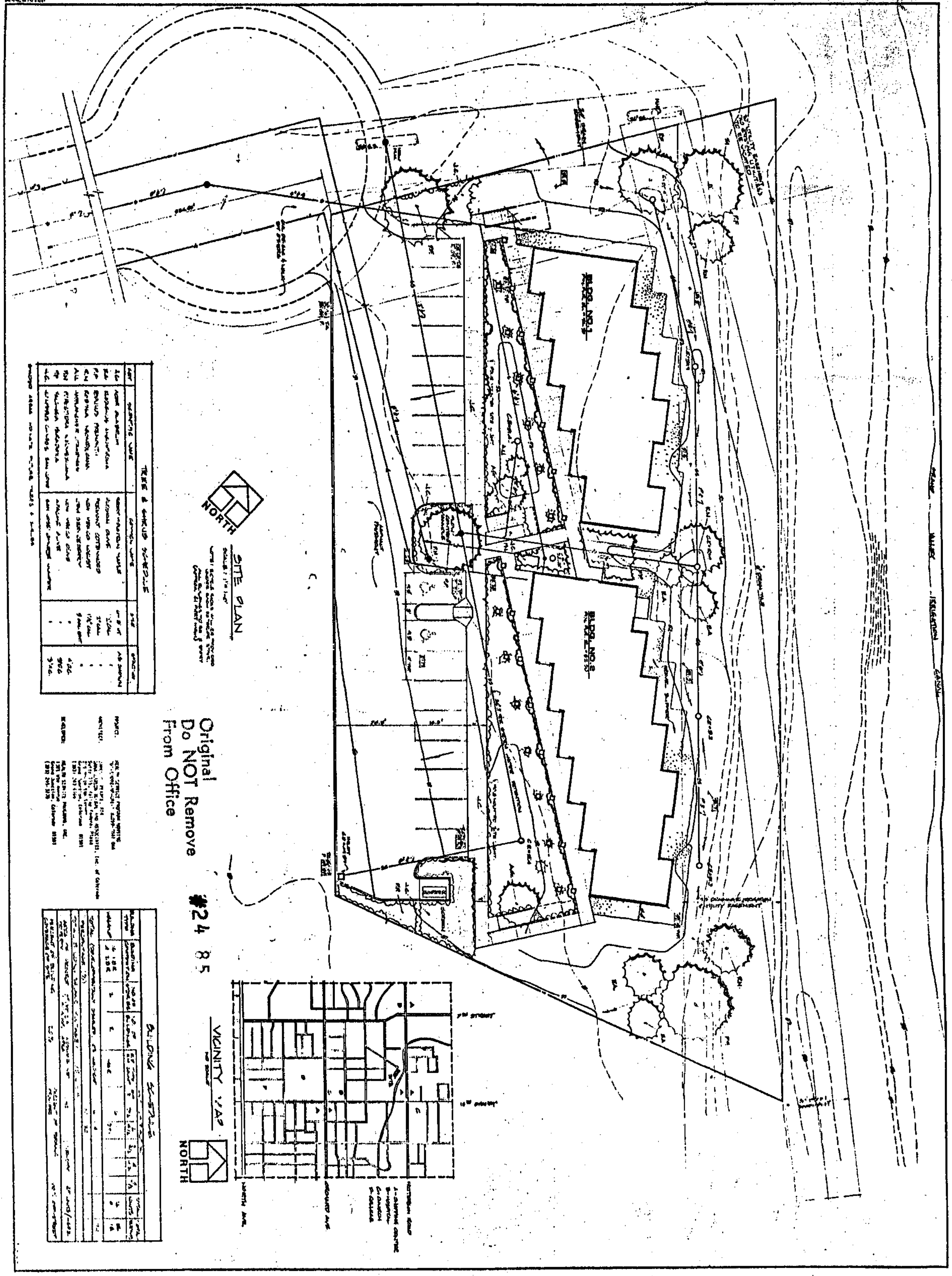

HEALTH SERVICE PROGRAMS HOUSING

DANA LARSON ROUBAL AND ASSOCIATES ARCHITECTS AND ENGINEERS

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

GEOTECHNICAL INVESTIGATION

PROPOSED COLORADO WEST REGIONAL

MENTAL HEALTH HOUSING

GRAND JUNCTION, COLORADO

Prepared for:

DANA, LARSON, ROUBAL & ASSOCIATES

PROJECT NUMBER: M85008GE

February 13, 1985

P.O. BOX 3986
GRAND JUNCTION, CO 81502
(303) 245-6506

P.O. BOX 0045
MONTROSE, CO 81402
(303) 249-2154

463 TURNER, 104 A
DURANGO, CO 81301
(303) 259-5095

Lambert and Associates
CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

February 19, 1985

Dana Larson Roubal & Associates
225 North 5th Street
Valley Federal Plaza
Suite 115
Grand Junction, CO 81501

Attention: Mr. Kelly Wilson

Subject: Colorado West Regional Mental Health Housing,
Grand Junction, Colorado

References: Our Geotechnical Report for the
subject project, dated February 13, 1985,
our Project Number: M85008GE

Dear Mr. Wilson;

This letter is intended as an addendum to our referenced report for the subject project. It is our understanding that the proposed structures will be two (2) story wood frame superstructures rather than one (1) story as noted in our report. A review of our analysis indicates that the recommendations presented in our report are appropriate for the proposed construction.

It is our understanding that you need a value for the modulus of subgrade reaction (K) for the design of the concrete flatwork. We suggest that you use a K value of about 125 psi/inch for your design of the sidewalks and other exterior concrete flatwork founded on on-site materials.

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If you have any questions regarding the geotechnical aspects of your project please contact us.

Respectfully submitted,

LAMBERT & ASSOCIATES

Reviewed by:

Norman W. Johnston, P.E.
Manager Geotechnical Engineering

Dennis D. Lambert, P.E.
Principal Geotechnical Engineer

NWJ/dkw

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GENERAL

This report presents the results of our geotechnical investigation conducted at the proposed Colorado West Regional Mental Health Housing. The site is located in the Little Bookcliff Subdivision, Grand Junction, Colorado. The investigation was conducted at the request of Mr. Gary Schneider, Dana, Larson, Roubal and Associates. The purpose of the investigation was to assist in the evaluation of the geotechnical engineering properties of the subsurface soil conditions at the site and provide geotechnical recommendations concerning the best types and depths of foundation, allowable soil bearing capacities, groundwater conditions and any special precautions which should be taken during design and construction at the site due to geotechnical conditions.

The conclusions, suggestions and recommendations presented in this report are based on the data gathered during our site and laboratory investigations and on our experience with similar soil conditions. Factual data gathered during the field and laboratory work are summarized in Appendices A and B.

PROPOSED CONSTRUCTION

It is our understanding that the proposed construction will include two (2) structures of multiple housing units.

The structures will be single story wood frame superstructures supported on reinforced concrete foundations. We anticipate that the floors will be concrete slab-on-grade floors at or near the existing elevation of the site. The site development will include exterior concrete flatwork and an asphalt paved parking area.

SITE CONDITIONS

At the time of the field investigation the site contained a dense cover of dormant alfalfa. The site is relatively flat with only minor topographic relief to the southwest. The Grand Valley Canal is located north and adjacent to the proposed site. A small stockpile of soil is located at the east edge of the site.

A review of "Earthquake Potential in Colorado" by the Colorado Geological Survey, Bulletin 43, dated 1981 indicates that there are two (2) mapped potentially active faults within a ten (10) mile radius of the site and eight (8) mapped potentially active faults within a twenty-five (25) mile radius of the site. One (1) epicentral location of an earthquake of magnitude of 4.0 to 4.9 is mapped within a twenty-five (25) mile radius of the site. Mapped potentially active faults and epicentral locations as presented in Bulletin 43 are shown on Figure 2.

SUBSURFACE CONDITIONS

The field investigation consisted of advancing six (6) test borings in the approximate area of the proposed buildings and parking lot. The approximate location of the test borings are shown on Figure 1. The logs of the soils encountered in the test borings are presented in Appendix A.

The soils encountered were fairly similar in the test borings. Generally thirty-one and one half (31.5) to sixty-one (61) feet of clays with varying amounts of silt and sand were encountered in the test borings. Formational material was encountered in test borings 1 and 4 at a depth of thirty-one and one half (31.5) and sixty-one (61) feet respectively. The clay soils tested have low swelling potentials and may consolidate under light loading conditions. The soils encountered in the test borings become more moist and soft at a depth of about four and one half (4.5) to seven and one half (7.5) feet. We anticipate that due to the nature of the vegetation on the site the organic content may extend to a depth of several feet.

The formational material encountered in test borings 1 and 4 is a silty clay shale of the Mancos formation. The formational shales typically have low swelling potentials in their hard unweathered form, however, they exhibit moderate to high swelling potentials when they become weathered.

Free groundwater was encountered in the test borings at depths of nine (9) to twelve (12) feet at the time of the field investigation. We anticipate that the groundwater elevation may be somewhat higher during wetter or irrigation seasons.

EXCAVATION CONSIDERATIONS

Foundation and utility trench excavations may encounter soils that tend to cave. Foundation and utility trench excavations should be well braced or sloped to prevent wall collapse. Federal, state and local safety codes should be observed.

FOUNDATION RECOMMENDATIONS

Two criteria which must be satisfied for satisfactory foundation performance are:

1) contact stresses must be low enough to preclude shear failure of the foundation soils which would result in lateral movement of the soils from beneath the footings, and

2) settlement or heave of the footings must be within amounts tolerable to the superstructure.

We have analyzed spread footings and driven piles as foundation systems for the proposed structures on the site. These are discussed below.

Spread Footings

Structures may be designed using conventional spread footings which are placed on the natural undisturbed clay

soils. The footings may be designed using a soil bearing capacity ranging from 1,000 to 1,500 pounds per square foot when placed on the natural undistrubed soils. We recommend that the footings have a minimum embedment of at least one (1) foot below the lowest adjacent grade or below the maximum depth of frost penetration for the area, whichever is deeper. The embedment concept is shown on Figure 3. The purpose of the embedment is to help develop the recommended soil bearing capacities. The soil bearing capacity will depend on the anticipated post construction settlement tolerable to the superstructure. The soil bearing capacities and associated anticipated post construction total settlements are presented below. The anticipated post construction settlements presented below are total settlements. We suggest that the anticipated differential settlement may be about one half (1/2) of the total settlement.

SOIL BEARING CAPACITY (PSF)	ANTICIPATED POST CONSTRUCTION TOTAL SETTLEMENT (INCHES)
1000	about 1/2 to 3/4
1250	about 3/4 to 1
1500	about 1 to 1 1/4

These loads may be increased by about one third (1/3) for transient loads such as wind and seismic.

Spread Footings-General Considerations

The bottom of foundation excavations should be proof-rolled prior to placing concrete. The proof-rolling is to help reduce the effect of any disturbance as a result of the excavation operation. If any loose, low density or yielding areas are evidence they should be removed and replaced with compacted structural fill. The structural fill material should be a non-expansive material that is moisture conditioned and compacted to at least 90 percent of the maximum dry density as defined by ASTM D1557, modified Proctor density. Fill placement guidelines are provided in Appendix C.

All footings should be proportioned as much as practicable to reduce the post construction settlement. Footings for large localized loads should be designed for bearing pressures in the range of the bearing pressures of adjacent footings to reduce the potential for differential settlements.

The bottom of the footings should be placed below the maximum depth of frost penetration for the area, refer to the local building code for details. We suggest that the elevation of the bottom of the footings be kept as high as possible to reduce the influence of the footings on the soft soils encountered in the test borings at a depth of about four and one half (4.5) to seven (7) feet.

Foundation walls should be reinforced, for geotechnical purposes, with at least two (2) number 5 bars, continuous at the top and bottom (4 bars total), at maximum vertical spacing. This will provide the walls with additional beam strength and help reduce the effects of slight differential settlements. The foundation walls may need additional reinforcing steel for structural purposes.

Driven Piles

The structures may be founded on driven piles that are designed as end bearing in the unweathered formational material as an alternative to the spread footing concept. We anticipate pile lengths will vary from about thirty-five (35) to sixty-five (65) feet. Due to the depths at which the formational material was encountered in the test borings we anticipate that the elevation of the surface of the formational material may be highly variable and the length of the piles may vary accordingly.

The pile capacity will depend on the pile type chosen, the hammer used to install the pile and the design loads on the pile. Once a pile type, pile driving contractor, and design loads are determined we should be contacted to provide a set versus design load curve for minimum penetration requirements to obtain the design pile capacity. There are two (2) pile types often used in this area, pipe piles and H piles. General pile considerations for H and pipe piles

are presented below.

Steel H-Piles have proved successful for pile installations where the piles extend to a competent bearing stratum. "H" piles may be readily spliced without loss of bending strength and point reinforcement may be used to reduce tip damage when driving through boulders or obstacles. Pre-fabricated splices and point reinforcement are available.

We suggest for design purposes and budget estimates you consider steel H-piles about ten (10) inches across, such as 10 x 57, extending about one (1) to two (2) feet into the formational material which will result in piles about thirty-five (35) to sixty-five (65) feet long. Based on our experience and Janbu's Formula for dynamic pile analysis it is our opinion that these piles can be designed for loads of about forty (40) to sixty (60) kips each. Pile groups designed to support concentrated loads should be spaced no closer than two (2) diameters to each other.

Pipe Piles can be driven to almost any length and will carry heavy loads when founded on a high bearing capacity stratum, such as the formational material underlying the site. Pipe piles up to sixteen (16) inches in diameter are often driven closed end below the water table. Pre-fabrication splices and point reinforcement are available.

We suggest for design and budgeting purposes that if you consider pipe piles use piles ten (10) inches in diameter, driven closed end, and backfilled with concrete. The concrete backfill will allow reinforcing steel to be cast into the pile to tie the pile and structure together easily. Pipe piles will be about thirty-five (35) to sixty-five (65) feet long and typically can be designed to support eighty (80) to one hundred (100) kips per pile. Piles should be spaced no closer than two and one half (2.5) diameters to each other for pile clusters or groups designed for concentrated loads.

Piles-General Considerations

The structural engineer should be consulted for structural requirements of the piles. Once a pile type, hammer and contractor has been selected we should be contacted for specific geotechnical design and construction criteria.

Any tendency for the pile to deviate from the required driving aperture should be corrected at the onset of the deviation. We suggest that the hammer used to install the piles have a minimum rated energy of 20,000 foot pounds.

We are available to provide geotechnical observation during the installation operations to provide a driving

record for each pile and provide geotechnical consultation during the installation operations.

INTERIOR FLOOR SLAB CONSTRUCTION

We estimate that floors may be concrete slab-on-grade. The natural soils that will support interior floor slabs are stable at their natural moisture content. However, the owner should realize that when wetted the on-site soils, if supporting floor slabs, may experience some volume changes.

Concrete slab-on-grade floors should be underlain by a structural fill to help improve the support characteristics of the on-site soils. The structural fill should be at least one (1) foot thick and should be a non-expansive material. The material should be moisture conditioned and compacted to at least 90 percent of modified Proctor density, ASTM D1557. Fill placement guidelines are provided in Appendix C. The on-site materials are not suitable for use as structural fill material. We suggest a non-expansive soil such as pit run aggregate with the maximum aggregate size less than about three (3) inches or a three-quarter (3/4) inch minus road base aggregate for the compacted structural fill material. Care should be used in choosing pit run or other import material for structural fill purposes because the nature of the fine grained portion of the matrix will have a significant influence on its performance. Any organic

soils encountered in the floor slab areas should be removed prior to placing fill or concrete.

The slabs should be provided with a positive separation, such as a slip joint, from all bearing members and utility lines to allow their independent movements and to help reduce possible damage that could be caused by movement of soils supporting interior slabs. The floor slab should be constructed as a floating slab. All water and sewer pipelines should be isolated from the slab.

Joints should be scored or jointed in the concrete slabs to help define the locations of any cracking. The areas defined by scoring and jointing should be about square and enclose about 200 square feet.

A moisture barrier may be installed beneath the floor slab to help discourage capillary and vapor moisture rise through the floor slab which could affect the performance of overlying floor coverings. The moisture barrier may consist of a heavy plastic membrane, six (6) mil or greater, protected on the top and bottom by at least two (2) inches of clean sand. The plastic membrane should be lapped and taped or glued and protected from punctures during construction.

The Portland Cement Association suggests that welded wire reinforcing mesh is not necessary in concrete slab-on-

grade floors when properly jointed. It is our opinion that due to the nature of the on-site soils, welded wire mesh would help improve the integrity of the slab-on-grade floors. We suggest that concrete slab-on-grade floors be reinforced, for geotechnical purposes, with at least 6 x 6 - 6 x 6 (6 x 6 - W2.9 x W2.9) welded wire mesh positioned midway in the slab and continuous across joints.

LATERAL EARTH PRESSURES

Buried walls supporting soil will act as retaining walls and should be designed as such.

Walls that are restrained so that they are not able to deflect to mobilize active earth pressures, such as basement walls, should be designed for at-rest earth pressures. Walls that are not restrained and are able to deflect to mobilize active earth pressures should be designed for active earth pressures. The earth pressures will depend on the type of soil used as backfill and how the backfill is constructed. Values for the earth pressures based on type of material and backfill construction are presented below.

BACKFILL CONSTRUCTION	AT-REST LATERAL EARTH PRESSURE (POUNDS PER CUBIC FOOT PER FOOT DEPTH)	ACTIVE LATERAL EARTH PRESSURE (POUNDS PER CUBIC FOOT PER FOOT DEPTH)
Compacted backfill with on-site disturbed soils	90	75
Compacted backfill with 3/4 inch minus crushed aggregate without overexcavating beyond the zone of influence	70	55
Overexcavated beyond the zone of influence and backfilled and compacted with 3/4 inch minus crushed aggregate	45	30

The backfill concept is shown on Figure 4. The lateral earth pressures provided above should be treated as equivalent fluid pressures. The lateral earth pressures presented above do not include any surcharge loads from vehicles or buildings behind the retaining walls.

Resistant forces used in the design of the walls will depend on the type of soil that tends to resist movement. Passive earth pressures and coefficients of friction based on soil types are presented below.

SOIL TYPE TENDING TO RESIST MOVEMENT	PASSIVE EARTH PRESSURE (POUNDS PER CUBIC FOOT PER FOOT DEPTH)	COEFFICIENT OF FRICTION FOR SOIL UNDER FOOTING
Natural on-site soil	150	0.1
3/4 inch minus aggregate base course	550	.5

Walls retaining soils should be designed and constructed so that hydrostatic pressure will not accumulate or will not affect the integrity of the walls. Drainage plans should include a subdrain behind the wall at the bottom of the backfill to provide positive drainage. Drain systems are discussed below. The ground surface adjacent to the wall should be sloped to permit rapid drainage of rain and irrgation water away from the wall backfill. Sprinkler systems should not be installed directly adjacent to retaining or basement walls.

DRAIN SYSTEM

Free water was encountered in the test holes at the time of the field investigation, at depths ranging from nine (9) to twelve (12) feet. We suggest that if walls are designed to retain soils a subdrain system be placed around the outside of the foundation at the footing depth behind walls that are retaining soils.

Subdrains should consist of a three (3) inch perforated

pipe surrounded by a filter. The filter should consist of a filter fabric or a graded filter material such as washed concrete sand of pea gravel. If sand or gravel is chosen the pipe should be placed in the middle of about four (4) cubic feet per linear foot of pipe. The drain system should be slope to a positive gravity outlet. The drains should be located around the exterior of the building, behind each wall retaining soil at the footing depths. A conceptual sketch of the drain system cross section is shown on Figure 5. We should be called to observe the soils exposed in the excavations to verify the details of the drain system and the subsurface conditions exposed.

FLEXIBLE PAVEMENT THICKNESS DESIGN RECOMMENDATIONS

Flexible pavement design for the proposed parking area is based on the anticipated volume and type of traffic and on the bearing quality of the subgrade soils. The design sections presented are based on a subgrade resistance (R-value) of fifteen (15). The traffic level design parameters were based on the anticipated traffic, column using a traffic index, TI, equal to three and one half (3.5). The R-value was calculated from California Bearing Ratio (CBR) value of six and one half (6.5) using "Thickness Design-Asphalt Pavements for Highways and Streets" by the Asphalt Institute, Manual Series Number 1 (MS-1) dated Septemeber 1981.

Several alternate pavement design sections based on the "R" value and traffic index are given in tabular form below.

ASPHALT CONCRETE (INCHES)	CLASS 6 AGGREGATE BASE COURSE (INCHES)	RECONDITIONED SUBGRADE (INCHES)
0	12	12
2	7	12
3	5	12
5	0	12

The pavement design section of two (2) inches of asphalt over aggregate base course may be used, although, because of the shorter life before maintenance and the relatively poorer long term performance, we suggest that this be considered as an intermediate design section only. If this design section is used we suggest you consider an asphalt overlay of about one (1) to one and one half (1.5) inches to extend the life of the pavement section. The overlay should be constructed prior to any visible distress occurring in the pavement.

Prior to subgrade preparation the area should be stripped of all construction debris, organic and deleterious material to exposed the natural subgrade material. The subgrade materials exposed by stripping should be scarified to a depth of at least six (6) inches, moisture conditioned and compacted. Compacted fill should be placed to subgrade elevation or to one (1) foot below the subgrade elevation, whichever will provide at least one (1) foot of compacted

subgrade, compacted to at least 90 percent of modified Proctor density as defined by ASTM D1557.

During subgrade processing any areas exhibiting low density, loose, yielding or spongy conditions should be removed and replaced with compacted fill.

The aggregate base course material should conform with the Colorado Highway Department "Class 6" or similar grading specification. We recommend testing of the base material prior to use to determine conformance with the specification. The base course should be placed in lifts not exceeding six (6) inches and compacted to at least 90 percent as determined by ASTM D1557.

The gradation requirements for Class 6 material is tabulated below.

U. S. STD. SIEVE SIZE	PERCENT PASSING
3/4"	100
No. 4	30-65
No. 8	25-55
No. 200	3-12

Asphalt material should be mixed from an approved mix design stating the marhsall properties, optimum asphalt content, job mix formula and recommended mixing and placing temperatures. We recommend verification of the mix design prior to paving. The asphalt materials should be placed in lifts not exceeding

three (3) inches and compacted to a minimum of 93 percent marshall density.

The asphalt concrete should conform with the Colorado Highway Department "Grading E" specification. These specifications are tabulated below.

U. S. STD. SIEVE SIZE	PERCENT PASSING
3/4"	100
No. 4	45-78
No. 8	30-60
No. 200	3-12

SURFACE DRAINAGE

The foundation soils should be prevented from being wetted after construction. This can be done by providing positive and rapid drainage of surface water away from the building. Backfill areas should be constructed by moisture conditioning and compacting in thin lifts such that the backfill placed around the foundation walls will not settle after completion of construction, and that the backfill is relatively impervious.

The final grade of the ground surface adjacent to the building should have a positive slope away from the foundation walls on all sides. We suggest a minimum fall of twelve (12) inches in the first ten (10) feet away from the foundation.

Downspouts and faucets should discharge into splash blocks that extend beyond the limits of the backfill areas. Splash blocks should be sloped away from the foundation walls.

Snow storage areas should not be located next to the structure.

BACKFILL

The foundation and utility trench backfill inside and outside of the structure should consist of compacted material. The compacted material should be free of trash and it should be moisture conditioned and compacted to at least 90 percent relative compaction using a modified Proctor density (ASTM D1557). Only enough water should be added to backfill material to allow proper compaction. Do not puddle, pond or jet backfill soils.

LANDSCAPE IRRIGATION

An irrigation system should not be installed adjacent to foundation walls, concrete flatwork or paved areas. If a sprinkler system is installed, the sprinkler heads should be placed so that the full pressures spray does not fall within five (5) feet of foundation walls, concrete flatwork or paved areas.

LIMITATIONS

It is the owner's and the owner's representatives responsibility to read this report and become familiar with the recommendations and suggestions presented in this report. If any questions arise concerning the geotechnical aspects of this report as a result of the information presented in this report we should be contacted.

The recommendations outlined above are based on our understanding of the currently proposed construction. We are available to discuss the details of our recommedations with you, and revise them where necessary.

In any subsoil and foundation investigation it is necessary to assume that subsurface conditions do not vary greatly from those encountered in the test borings. Our experience has shown that these variations exist and that they may become apparent during foundation excavation. For this reason, we should be called to observe foundation excavations prior to foundation construction and if, during construction, any unusual or unexpected conditions are encountered. The cost of the geotechnical observations and testing during construction is not included in the fee for this report. We suggest that observation and testing services during construction be the owner's responsibility to maintain third party credibility.

We represent that our services were performed within the limits prescribed by you and with the usual thoroughness and competence of the current accepted practice of the geotechnical engineering profession in the area. No warranty or representation either expressed or implied is included or intended in this report or our contract. We are available to discuss our findings with you. If you have any questions please contact us. The supporing data for this report is included in the accompaning figures and appendices.

Please call when further consultation or observations and tests are required.

CREDITS

The building and site information used during the analysis and preparation of this report were provided by Mr. Kelly Wilson, Dana, Larson, Roubal and Associates, architect for the project. The analysis and report preparation were performed by Mr. Norman Johnston. The field information and soils samples were obtained by Mr. Norman Johnston. Drilling serives were provided by P and P Drilling.

If we may be of further assistance, please call.

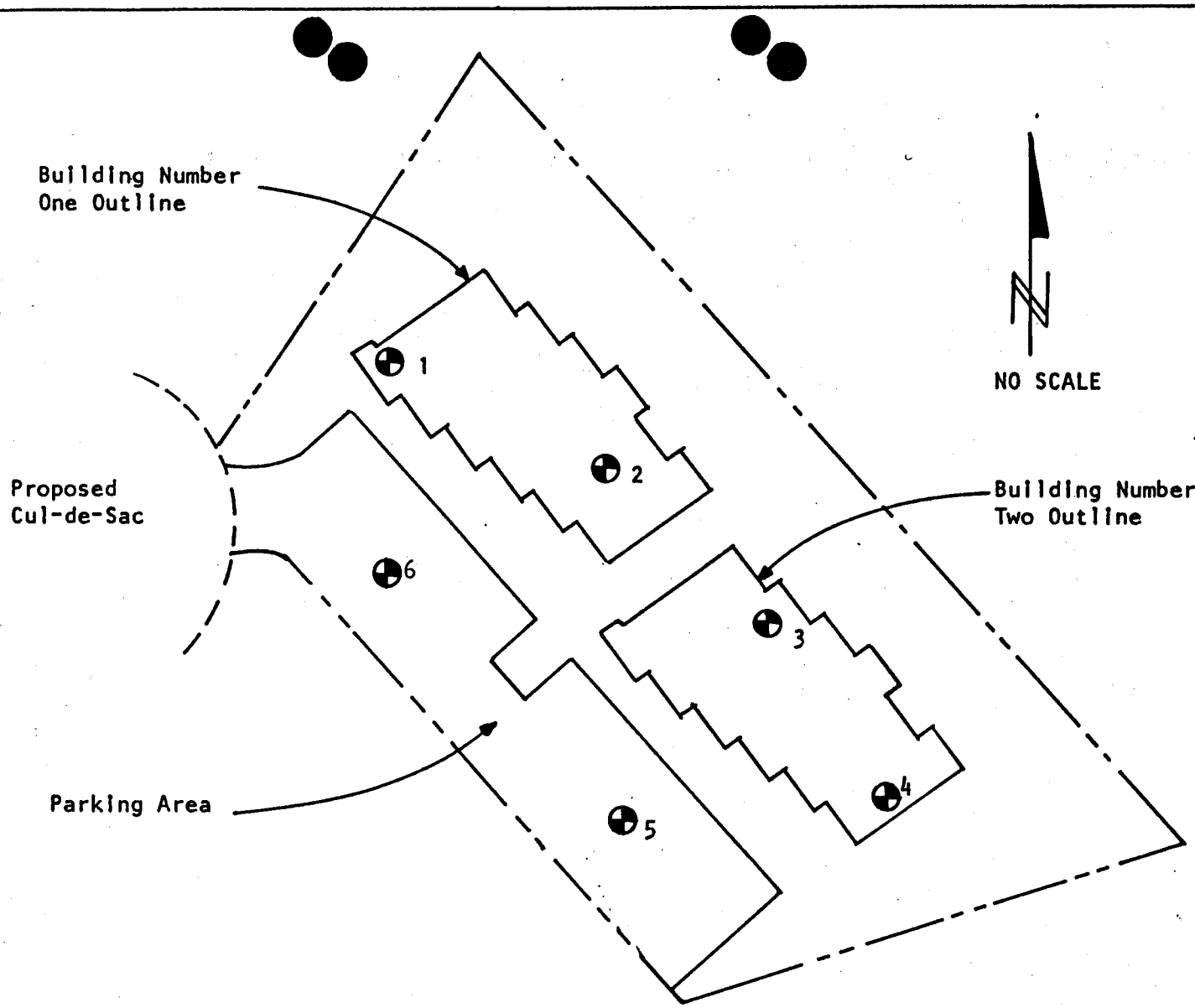
Respectfully submitted,

LAMBERT & ASSOCIATES

Norman W. Johnston, P.E.
Manager Geotechnical Engineering

Reviewed by:

Dennis D. Lambert, P.E.
Principal Geotechnical Engineer

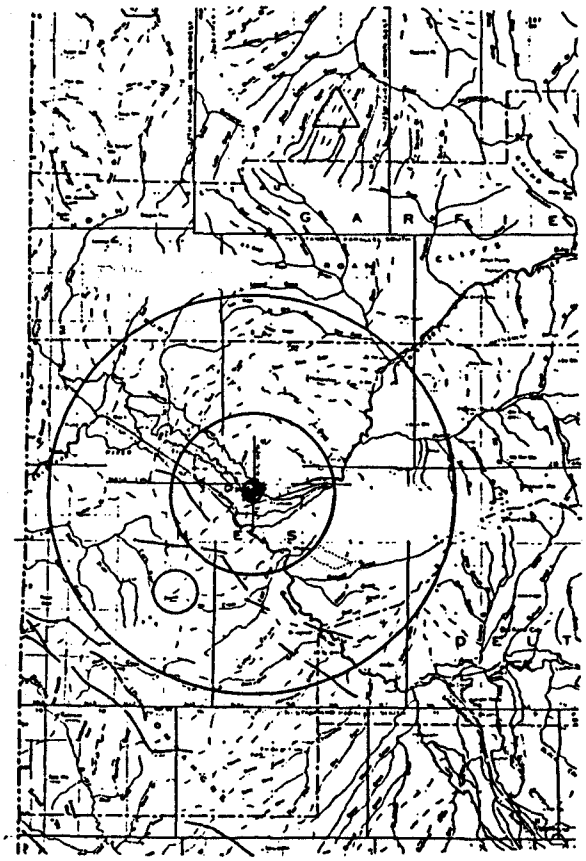


Indicates approximate location of test borings.

This sketch was reproduced from plans provided by Mr. Kelly Wilson, Dana Larson, Roubal and Associates, and is intended to present geotechnical data only.

Lambert and Associates

Project No.:	M85008GE
Date:	2/13/85
Figure:	1



NO SCALE

EXPLANATION

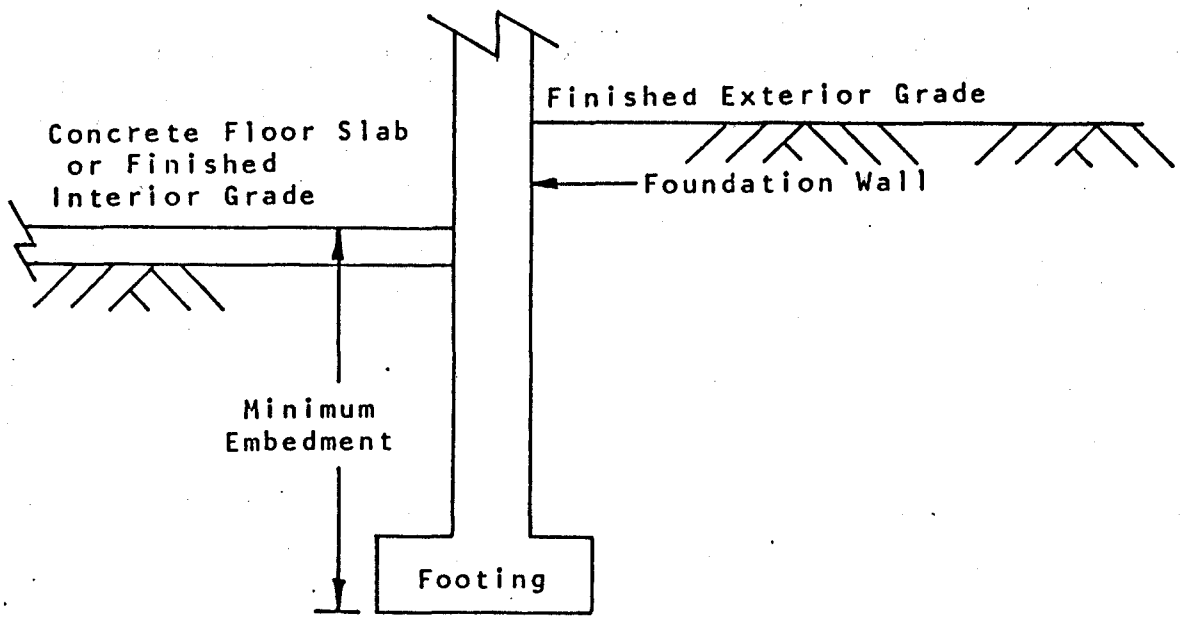
- Epicentral location of an earthquake of magnitude 2.5 to 3.9; only selected earthquakes of this magnitude range are plotted near the Rocky Mountain Arsenal
- Epicentral location of an earthquake of magnitude 4.0 to 4.9
- Epicentral location of an earthquake of magnitude 5.0 to 5.9
- Location and intensity of a felt earthquake of Modified Mercalli Intensity III to V; only selected earthquakes of intensity III are plotted
- Location and intensity of a felt earthquake of Modified Mercalli Intensity VI
- Location and intensity of a felt earthquake of Modified Mercalli Intensity VII
- Nuclear explosions detonated as part of the Plowshare Program; magnitude 5.0 to 5.5
- Potentially active fault (from Plate 1)

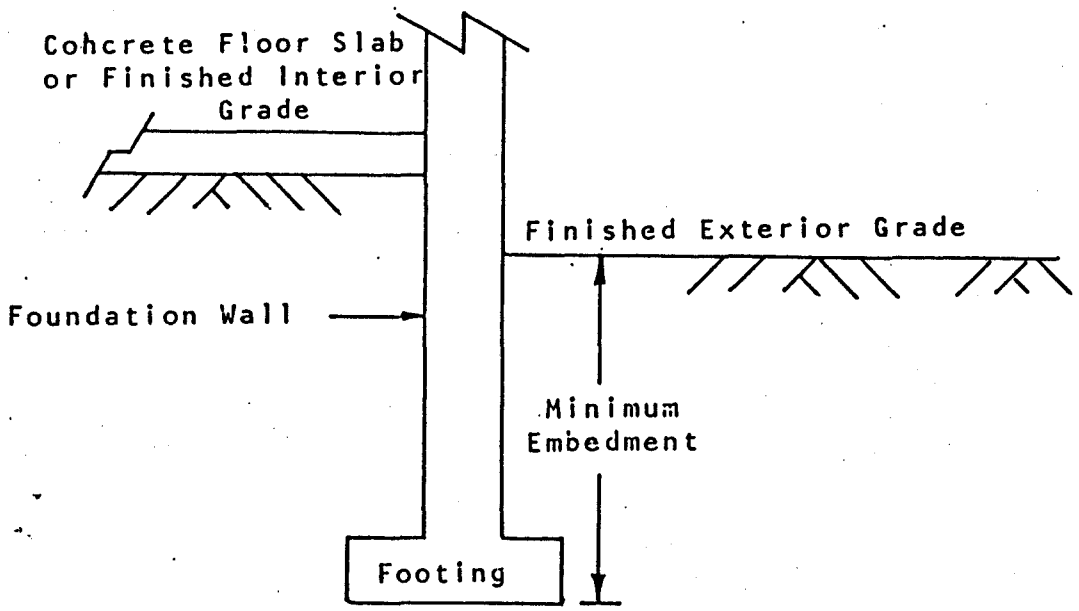
◒ Indicates approximate project location.

This map was reproduced from Plate 3 of "Earthquake Potential in Colorado" by the Colorado Geological Survey, Department of Natural Resources, dated 1981.

Lambert and Associates

Project No.:	M85008GE
Date:	2/13/85
Figure:	2



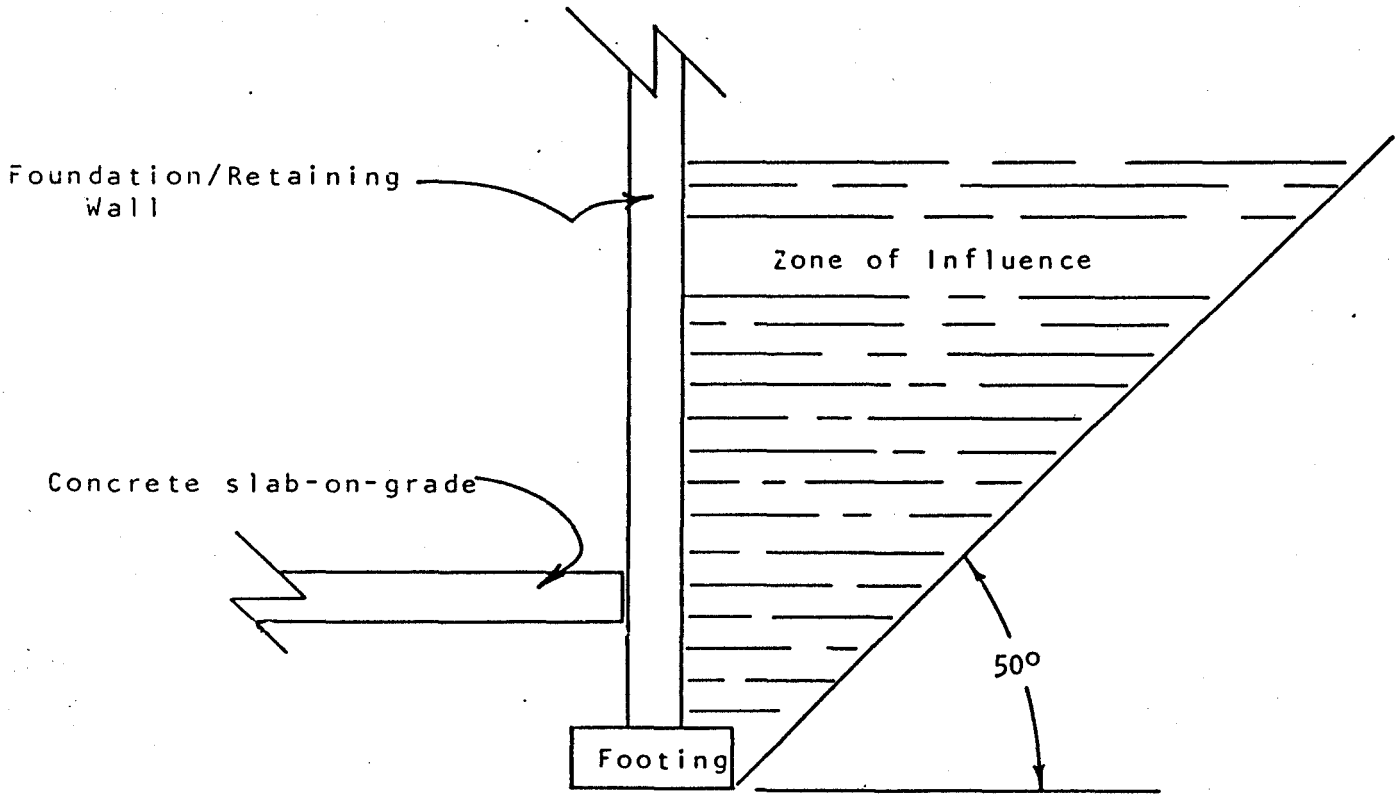


EMBEDMENT CONCEPT

NO SCALE

Lambert and Associates

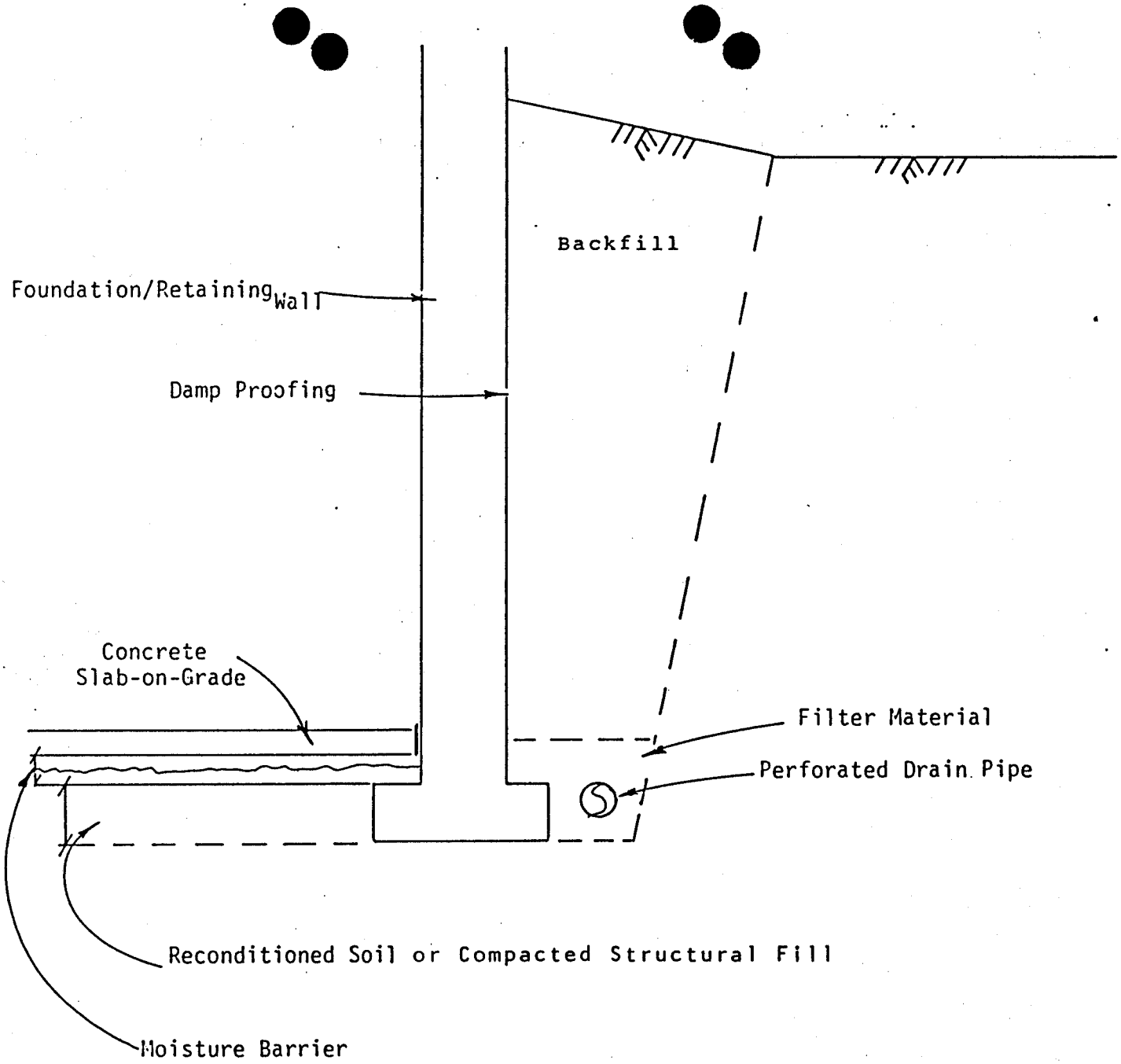
Project No.:	M85008GE
Date:	2/13/
Figure:	3



BACKFILL ZONE OF INFLUENCE CONCEPT

Lambert and Associates

Project No.:	M85008GE
Date:	2/13/85
Figure:	4



DRAIN SYSTEM

Lambert and Associates

Job No:	M85008GE
Date:	2/13/85
Figure	5

APPENDIX A

The subsurface exploration was performed on January 22, 1985. The drilling program consisted of excavating six (6) borings about four (4) to sixty-four (64) feet deep, logging and collecting samples. Drilling was accomplished using a truck-mounted, four (4) inch diameter continuous flight power auger.

The borings were logged by Mr. Norman Johnston, Project Engineer, Lambert and Associates, and sleeve samples were taken of significant soil types. The sleeve samples were taken from the borings using a modified California barrel sampler. Disturbed samples were taken from the borings using a standard split barrel sampler. Bulk disturbed samples were obtained from the proposed parking lot area. Blow counts were determined using a 140 pound hammer falling thirty (30) inches, noted on the log, 2/6, indicating that two (2) blows were required to drive the sampler six (6) inches.

The blow counts for each sample are noted on the log of the borings, Figures A2 through A10. Sleeve samples were capped and sealed immediately upon extraction. All samples were returned to our laboratory for testing.

The engineering field descriptions and major soil classifications are based on our interpretation of the materials encountered and are prepared according to the

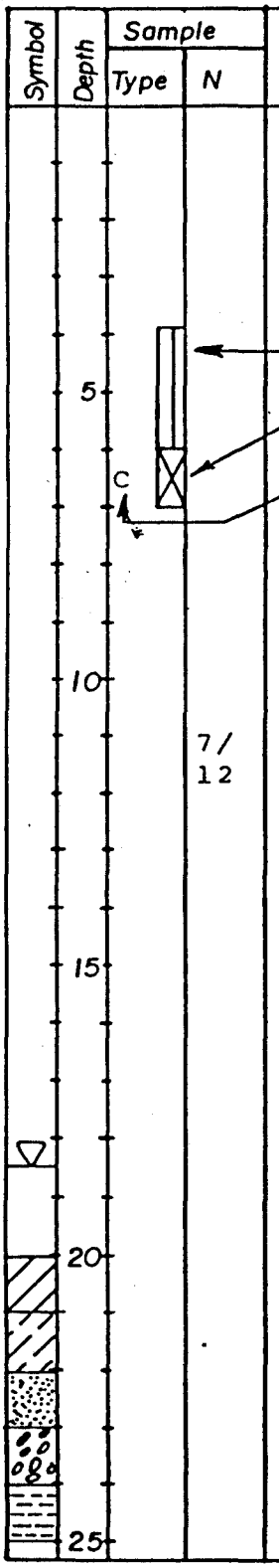
Unified Soil Classification System, ASTM D2488. Since the description and classification which appears on the boring logs is intended to be that which most accurately describes a given interval of boring (frequently an interval of several feet), discrepancies do occur in the Unified Soil Classification System nomenclature between that interval and a particular sample in the interval. For example, an eight-foot thick interval in the boring log may be identified as a silty sand (SM) while one sample taken within the interval may have individually been identified as a sandy silt (ML). This discrepancy is frequently allowed to remain to emphasize the occurrence of local textural variations in the interval.

KEY TO LOG OF TEST BORINGS

Date Drilled _____ Field Engineer _____ Boring Number _____

Location _____ Elevation _____

Diameter _____ Total Depth _____ Water Table _____



Soil Description

Sand, silty, medium dense, moist, tan, (SM)

Unified Soil Classification

Indicates Bulk Bag Sample

Indicates Drive Sample

Indicates Sampler Type:

C - Modified California
H - Hand Sample
St - Standard Split Spoon
Sh - Thin Wall Tube Sampler

Indicates seven blows required to drive the sampler 12 inches with a hammer that weighs 140 pounds and is dropped 30 inches.

NR - indicates no sample recovered

CAVED - indicates depth the test boring caved after drilling

Indicates the location of free groundwater at the time of drilling

CLAY

SILT

SAND

GRAVEL

FORMATIONAL MATERIAL

Laboratory Test Results

Notes in this column indicate tests performed and test results if not plotted.

DD - indicates dry density in pounds per cubic foot

MC - indicates moisture content as percent of dry unit weight

LL - indicates Liquid Limit

PL - indicates Plastic Limit

PI - indicates Plasticity Index

Project Name Regional Mental Health Housing Project Number M85008GE Figure A1

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST BORING

Date Drilled 1/22/85 Field Engineer NJ Boring Number 1

Location _____ Elevation _____

Diameter 4 Inches Total Depth 34.5 feet Water Table 9 feet

Depth	Sample Type	Sample N	Soil Description	Laboratory Test Results
			Clay, silty, stiff, moist, brown, (CL), organic to about 1 foot	
5	C	2/6 4/6	Sand, fine grained, silty, loose, moist, brown, (SP-SM)	
			Clay, silty, soft, wet, brown, (CL)	
10	C	2/13		
15				
20				
			Stiffer	
25				

Project Name Mental Health Housing Project Number M85008GE Figure A2

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST BORING
(continued)

Date Drilled 1/22/85 Field Engineer NJ Boring Number 1 continued

Location _____ Elevation _____

Diameter 4 inches Total Depth 34.5 feet Water Table 9 feet

Symbol	Depth	Sample Type	Sample N	Soil Description	Laboratory Test Results
				Clay,silty,soft,wet,brown,(CL)-continued	
	30				
				Formational material,clay shale, hard,gray, Mancos Formation	
	35			Bottom of Test Boring at 34.5 feet	
	40				
	45				
	50				

Project Name Mental Health Housing Project Number M85008GE Figure A3

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIALS TESTING

LOG OF TEST BORING

Date Drilled 1/22/85 Field Engineer NJ Boring Number 2

Location _____ Elevation _____

Diameter 4 inches Total Depth 14 feet Water Table 9.5 feet

Symbol	Depth	Sample Type	Sample N	Soil Description	Laboratory Test Results
		C	6/6 8/6	Clay, silty, stiff, moist, brown, (CL), organic to 1 foot	Swell-Consolidation Test: MC: 6.3% DD: 99 pcf
				Some lenses of sand	
	5			Clay, silty, sandy, soft, wet, brown, (CL)	
		C	2/14		
	10				
	15			Bottom of Test Boring at 14 feet	
	20				
	25				

Project Name Mental Health Housing Project Number M85008GE Figure A4

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIALS TESTING

LOG OF TEST BORINGS

Date Drilled 1/22/85 Field Engineer NJ Boring Number 3

Location _____ Elevation _____

Diameter 4 inches Total Depth 14 feet Water Table 10 feet

Symbol	Depth	Sample Type	Sample N	Soil Description	Laboratory Test Results
				Clay, silty, sandy, stiff, moist, brown, (CL), organic to 1 foot	
	5	C	12/12	Some sand lenses	Swell-Consolidation Test: MC: 8.7% DD: 96 pcf Unconfined Compressive Strength: MC: 7.9% DD: 95 pcf
				Clay, silty, sandy, soft, wet, brown, (CL)	
▽	10	C	3/6 2/6		
	15			Bottom of Test Boring at 14 feet	
	20				
	25				

Project Name Mental Health Housing Project Number M85008GE Figure A5

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIALS TESTING

LOG OF TEST BORING

Date Drilled 1/22/85 Field Engineer NJ Boring Number 4

Location _____ Elevation _____

Diameter 4 inches Total Depth 64 feet Water Table 12 feet

Depth	Sample Type	Sample N	Soil Description	Laboratory Test Results
	C	5/6 6/6	Clay, silty, stiff, moist, brown, (CL), organic to about 1 foot	Unconfined Compressive Strength: MC: 7.4% DD: 96 pcf
			Moisture increase with depth	
5			Some sand lenses	
	C	8/12		
10			Clay, silty, sandy, soft, wet, brown, (CL)	
15				
20				
25				

Project Name Mental Health Housing Project Number M85008GE Figure A6

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIALS TESTING

LOG OF TEST BORING
(continued)

Date Drilled 1/22/85 Field Engineer NJ Boring Number 4 continued

Location _____ Elevation _____

Diameter 4 inches Total Depth 64 feet Water Table 12 feet

Symbol	Depth	Sample Type	Sample N	Soil Description	Laboratory Test Results
				Clay,silty,sandy,soft,wet,brown,(CL), continued	
	30				
	35				
				Clay,silty,stiff,very moist,brown to gray,(CL)	
	40				
	45				
	50				

Project Name Mental Health Housing Project Number M85008GE Figure A7

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIALS TESTING

LOG OF TEST BORI[illegible]
(continued)

Date Drilled 1/22/85 Field Engineer NJ Boring Number 4 continued

Location _____ Elevation _____

Diameter 4 inches Total Depth 64 feet Water Table 12 feet

Symbol	Depth	Sample Type	Sample N	Soil Description	Laboratory Test Results
				Clay, silty, stiff, very moist, brown to gray, (CL) continued	
	55				
	60			Formational material, medium hard	
				Bottom of Test Boring at 64 feet	
	65				

Project Name Mental Health Housing Project Number M85008GE Figure A8

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIALS TESTING

LOG OF TEST BORING

Date Drilled 1/22/85 Field Engineer NJ Boring Number 5

Location _____ Elevation _____

Diameter 4 inches Total Depth 4 feet Water Table _____

Symbol	Depth	Sample Type	Sample N	Soil Description	Laboratory Test Results
		BAG		Clay, silty, stiff, moist, brown, (CL), organic to about 1 foot	
	5			Bottom of Test Boring at 4 feet	
	10				
	15				
	20				
	25				

Project Name Mental Health Housing Project Number M85008GE Figure A9

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIAL TESTING

LOG OF TEST BORING

Date Drilled 1/22/85 Field Engineer NJ Boring Number 6

Location _____ Elevation _____

Diameter 4 inches Total Depth 4 feet Water Table _____

Symbol	Depth	Sample Type	Sample N	Soil Description	Laboratory Test Results
		BAG		Clay, silty, stiff, moist, brown, (CL), organic to about 1 foot	
	5			Bottom of Test Boring at 4 feet	
	10				
	15				
	20				
	25				

Project Name Mental Health Housing Project Number M85008GE Figure A10

Lambert and Associates

CONSULTING GEOTECHNICAL ENGINEERS AND MATERIALS TESTING

APPENDIX B

The laboratory investigation consisted of performing unconfined compressive strength tests, swell-consolidation tests, natural moisture content and dry density tests, California Bearing Ratio (CBR) tests, grain size analysis tests and Atterberg Limits tests. The moisture content and dry density test data are presented on the logs of the borings, Figures A2 through A10. The laboratory consolidation test results are presented on Figures B1 and B2. The unconfined compressive strength test results are presented on Figure B3. The CBR test results are presented on Figure B4. The Atterberg Limits and grain size analysis tests are presented on Figures B5 and B6.

It should be noted that samples obtained using a modified California barrel sampler are relatively "undisturbed", however, some disturbance does occur during the sampling operation. Test results obtained from these samples are used only as indicators of the engineering properties of the in situ soils.

Testing

Moisture Content and Dry Density Field moisture content and in-place density were determined for each sample tested of the undisturbed soil material obtained. The field moisture content was determined according to ASTM Test Method D2116-80 by obtaining the moisture sample from the drive sleeve. The

in-place dry density of the sample was determined by using the wet weight of the entire sample. The results of the field moisture content and in-place density determinations are presented on the boring logs, Figures A2 through A10.

Swell Tests Loaded swell tests were also performed on drive samples obtained during the investigation. These tests are performed in general accordance with ASTM Test Method D2435-80 to the extent that the same equipment and sample dimensions used for consolidation testing are used for the determination of expansion. A sample is subjected to a static surcharge, water is introduced to produce saturation, and volume change is measured as in ASTM Test Method D2435-80. Results are reported as percent change in sample height.

Consolidation Tests The one-dimensional consolidation properties of the undisturbed samples were evaluated according to the provisions of ASTM Test Method D2435-80. Water was added in all cases during the test. Exclusive of special readings during consolidation rate tests, readings during an increment of load were taken regularly until the change in sample height was less than 0.001 inch over a two-hour period. The results of the swell-consolidation load test are summarized on Figures B1 and B2, swell-consolidation test.

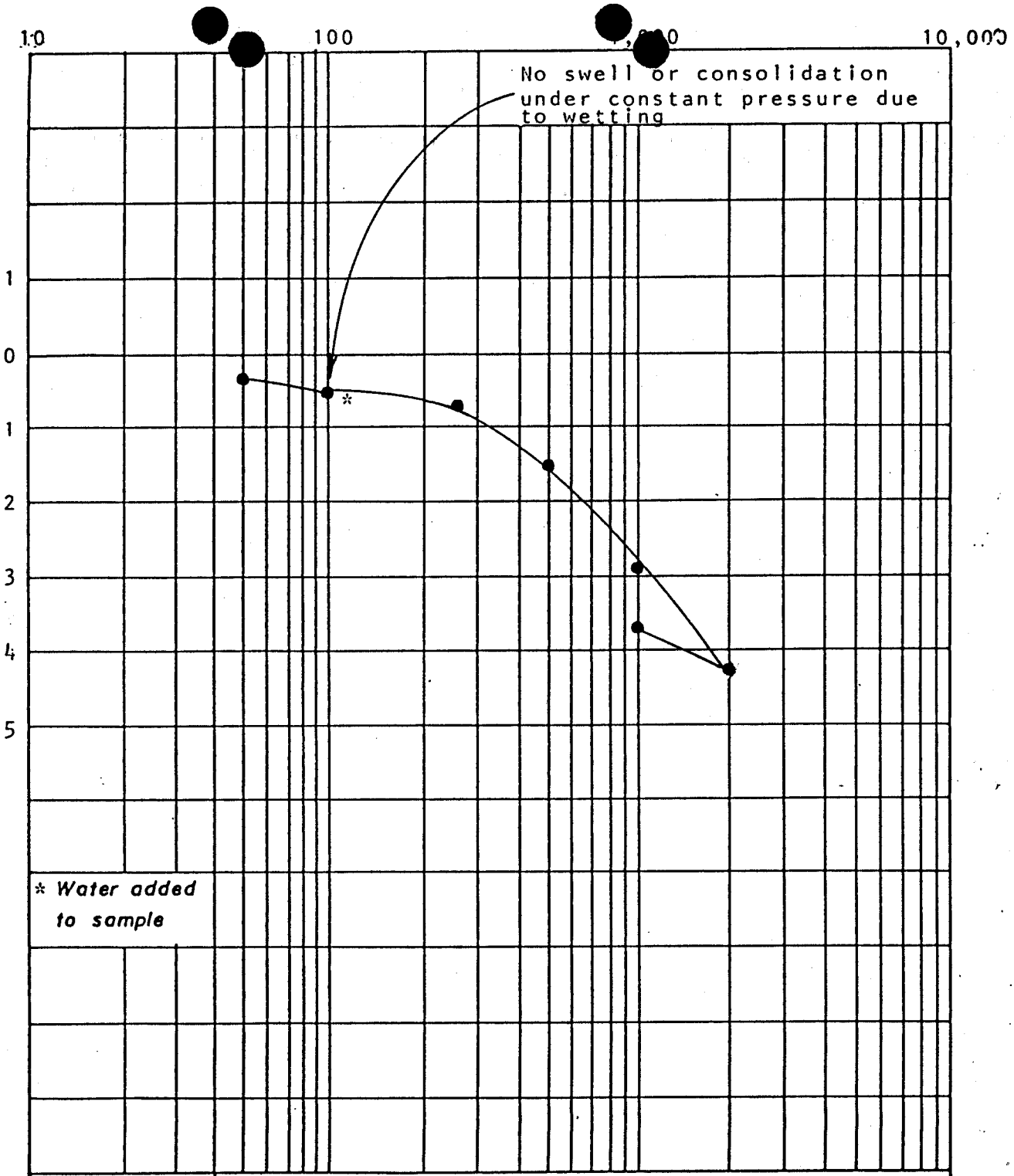
It should be noted that the graphic presentation of consolidation data is, in fact, a presentation of volume change with change in axial load. As a result, both expansion and consolidation can be illustrated.

Unconfined Compressive Strength Tests The unconfined compressive strength properties were evaluated in general accordance with testing procedures defined by ASTM Test Method D2167. The unconfined compressive strength was determined as the load per unit area at an axial stress of about four (4) percent or as the maximum load attained per unit area, whichever occurred first. The results of the unconfined compressive strength tests are presented on Figure B3.

California Bearing Ratio A California Bearing Ratio (CBR) test was conducted on a representative soil sample of the soils which are anticipated to be the support soils for the street. The CBR was conducted to determine the support characteristics of the subgrade soils. The CBR samples were determined in general accordance with ASTM Test Method D1883. The CBR value was converted to a Resistance value (R) based on methods provided by MS-1 "Thickness Design-Asphalt Pavement for Highways and Streets" by the Asphalt Institute dated September 1981. The CBR test results are presented on Figure B4.

Grain Size Analysis Grain size analysis tests were conducted on samples obtained during our field investigation. The grain size analysis was conducted in general accordance with ASTM Test Method D422. The results of the grain size analysis are presented on Figures B5 and B6.

Atterberg Limits Atterberg Limits tests were conducted on samples obtained during our field investigation. The Atterberg Limits tests were conducted in general accordance with ASTM Test Method D423 and D424. The results of the Atterberg Limits tests are presented on Figures B5 and B6.



Boring No. 2 Depth 2.5'	SUMMARY OF TEST RESULTS				
	Moisture Content (%)	Dry Density (P.C.F.)	Height (in.)	Diameter (in.)	Swell Pressure (P.S.F.)
Initial	6.3	99	1.0	1.94	about 200
Final	24.0	102	.963	1.94	
Soil Description	Clay, silty				

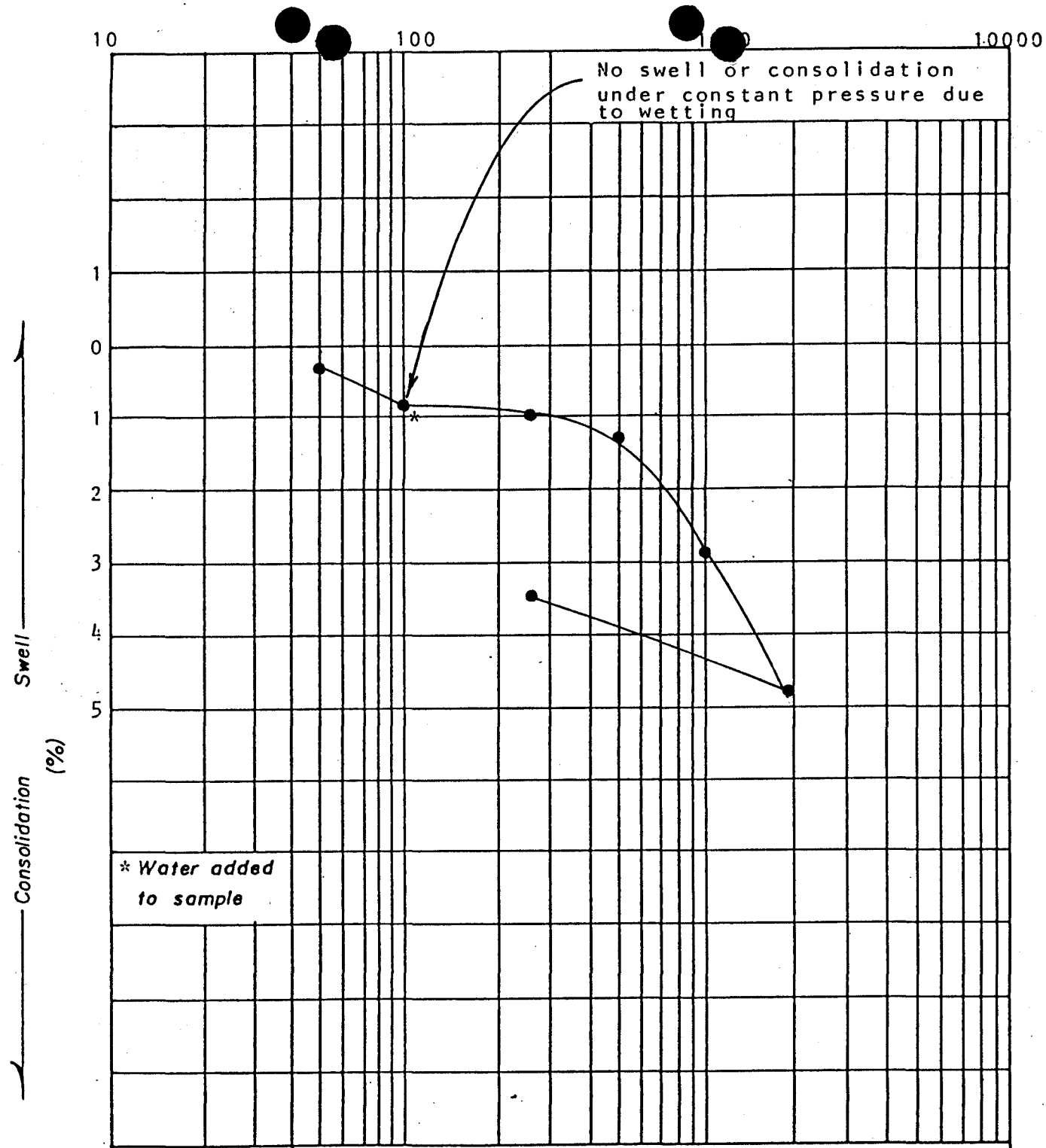
SWELL - CONSOLIDATION TEST

Lambert and Associates

Project No.: M85008GE

Date: 2/13/85

Figure: B1



Boring No. 3 Depth 4 feet	SUMMARY OF TEST RESULTS				
	Moisture Content (%)	Dry Density (P.C.F.)	Height (in.)	Diameter (in.)	Swell Pressure (P.S.F.)
Initial	8.7	96	1.0	1.94	about 250
Final	28.2	98	.965	1.94	
Soil Description	Clay, silty, sandy				

SWELL - CONSOLIDATION TEST

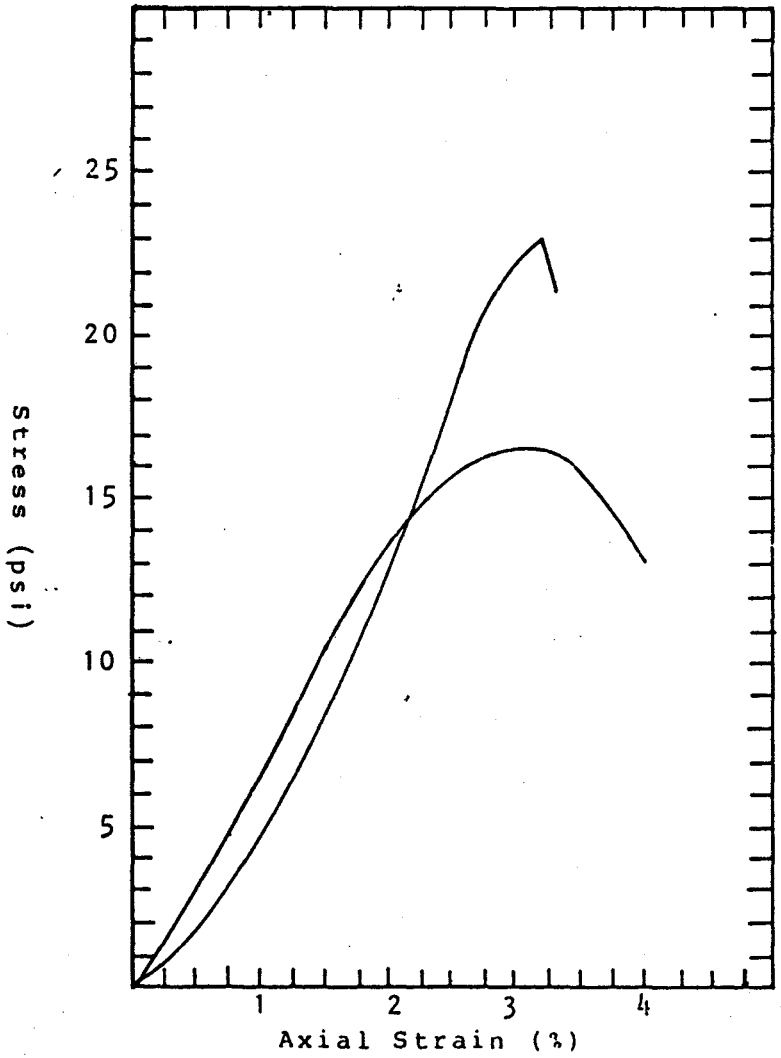
Lambert and Associates

Project No.: M85008GE

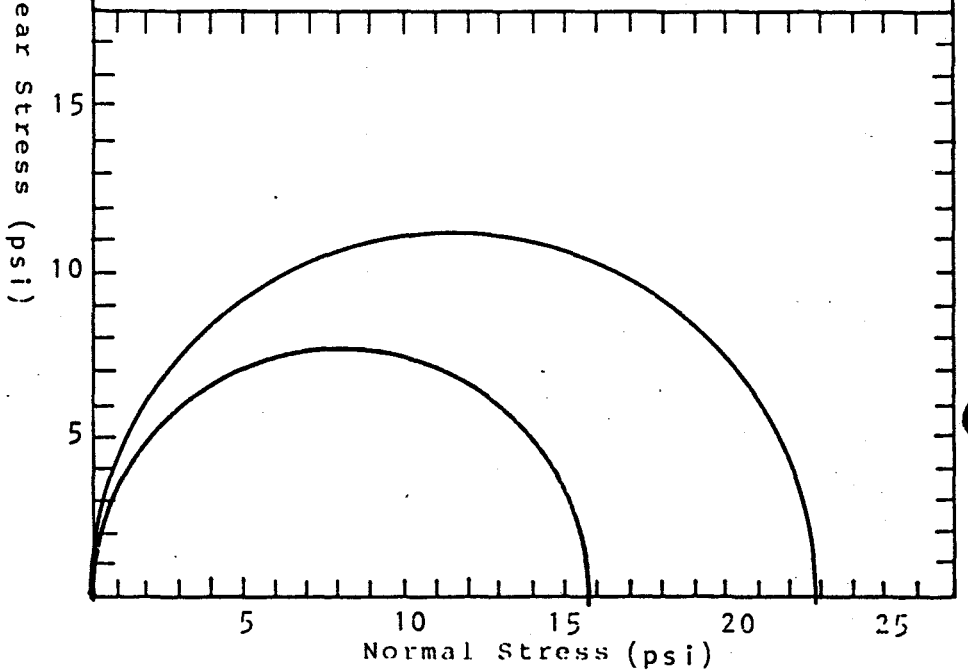
Date: 2/13/85

Figure: B2

Lambert and Associates



Sample Number	Init. Moist. Cont%	Init. Dry Denst. PCF	Conf. Press. PSF	Deviat. Stress	Pore Pressure
3 @ 4'	7.9	95		22.8	
4 @ 2.5'	7.4	96		16.5	



Type of Sample: Clay, silty

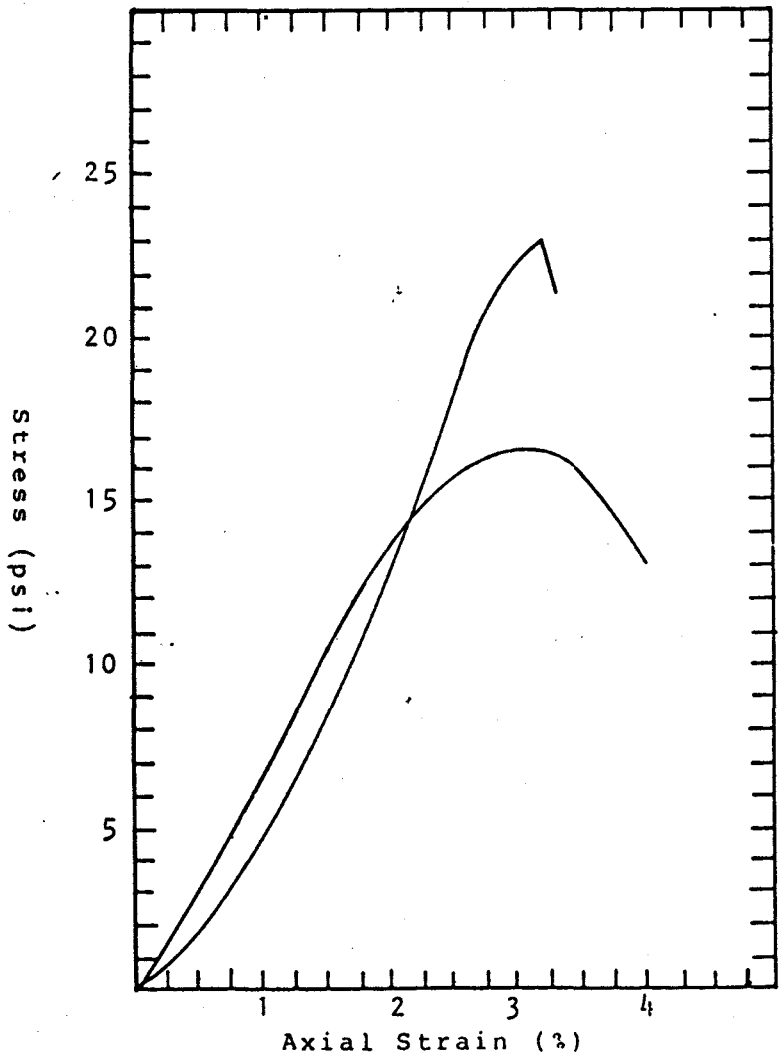
Type of Test: Unconfined Compressive Strength Test

COMPRESSION TEST

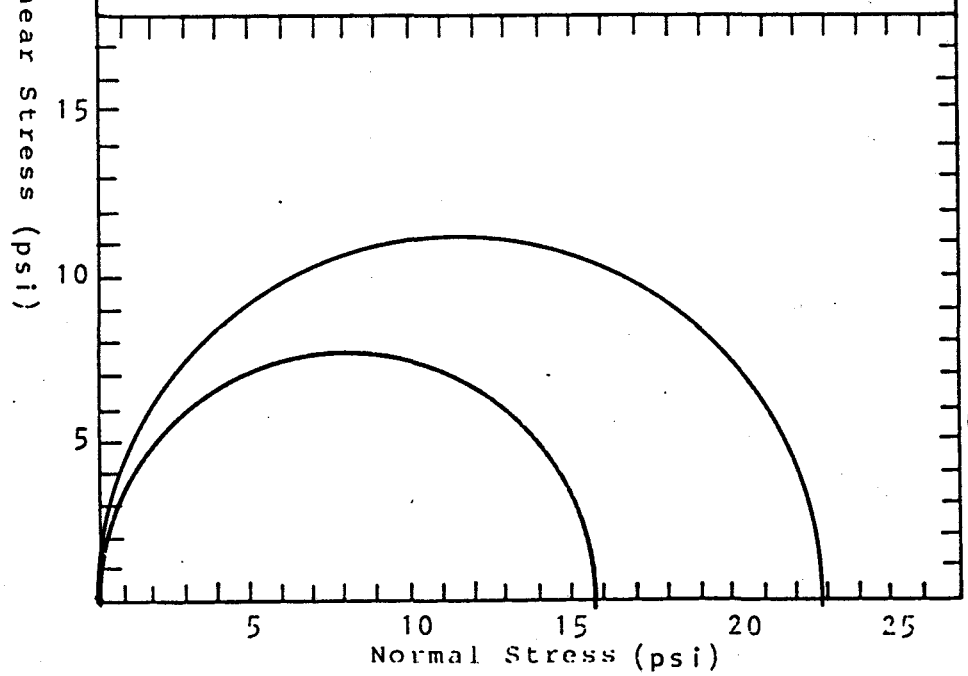
Project No.: M85008GE
Date: 2/13/85
Figure:

Lambert and Associates

Project No.:	M85008GE
Date:	2/13/85
Figure:	



Sample Number	Init. Moist. Cont%	Init. Dry Densit. PCF	Conf. Press. PSF	Deviat. Stress	Pore Pressure
3 @ 4'	7.9	95		22.8	
4 @ 2.5'	7.4	96		16.5	



Type of Sample: Clay, silty

Type of Test: Unconfined Compressive Strength Test

COMPRESSION TEST

Project: Mental Health Housing

Job Number: M85008GE

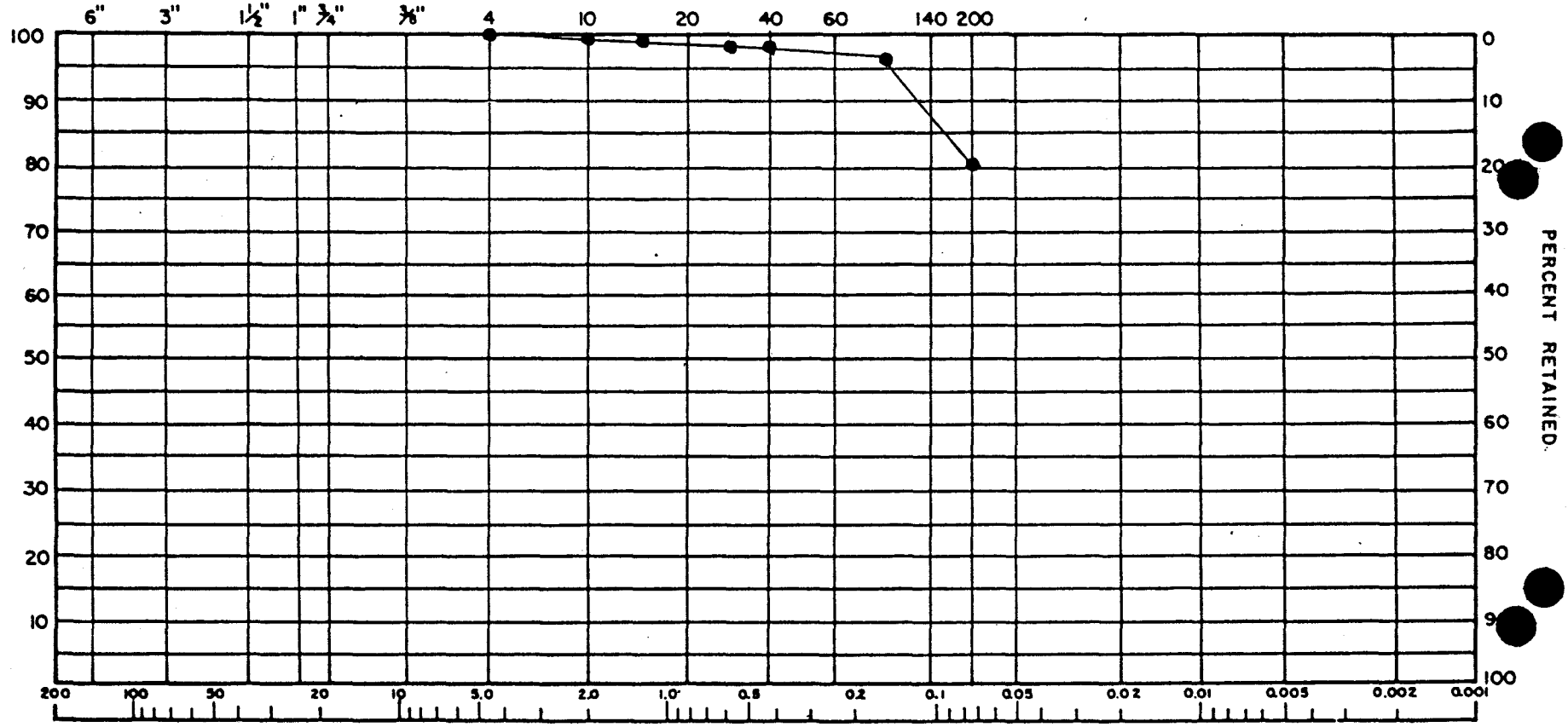
GRAIN SIZE DISTRIBUTION CURVES

Fig. B1

UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

U.S. STANDARD SIEVE SIZES



BORING NO.	DEPTH	SYMBOL	LL	PI	CLASSIFICATION
6	1-4'		24	6	Clay, silty

Project: Mental Health Housing

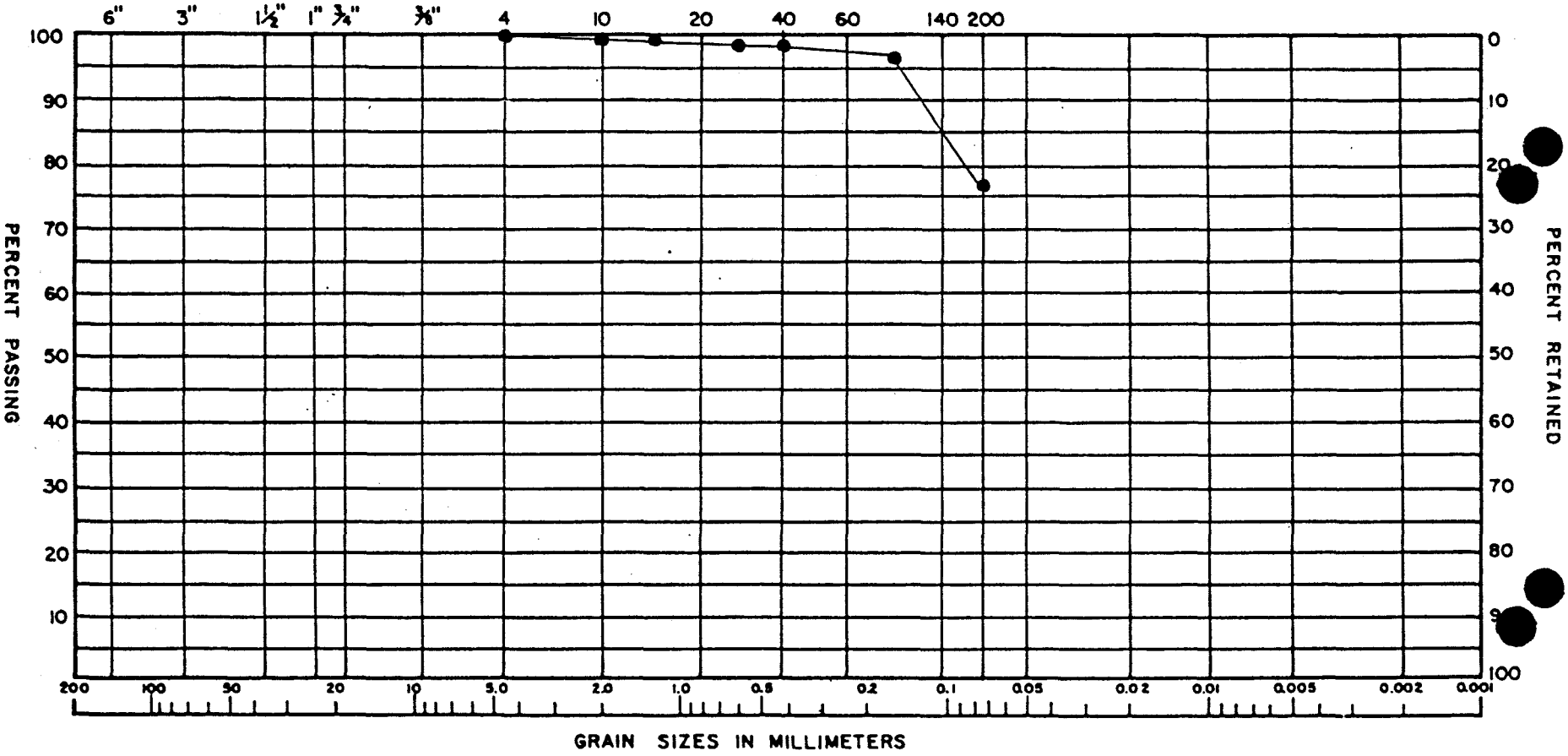
Job Number: M85009GE

GRAIN SIZE DISTRIBUTION CURVES

Fig: B5

UNIFIED SOIL CLASSIFICATION

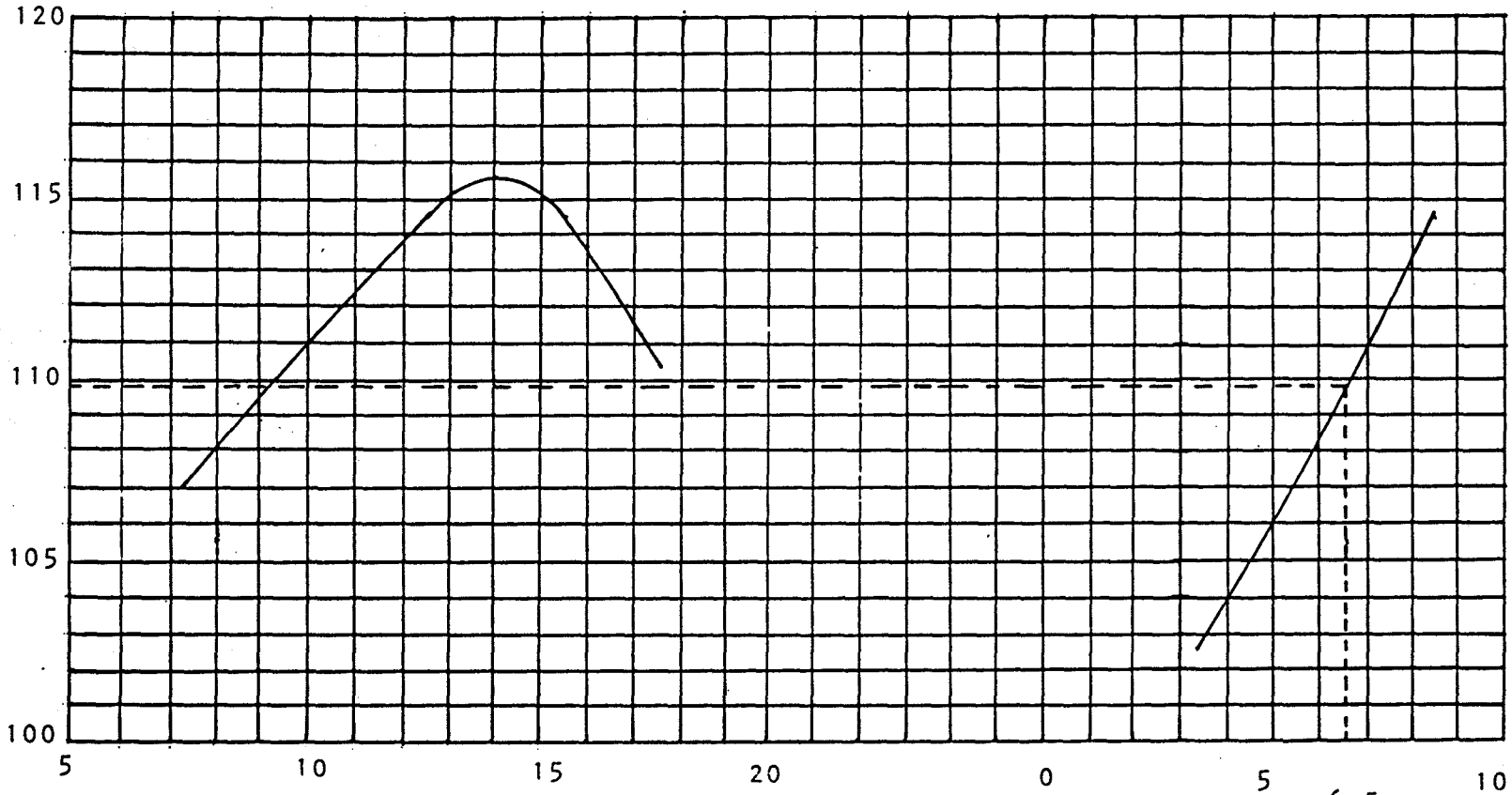
COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



BORING NO.	DEPTH	SYMBOL	LL	PI	CLASSIFICATION
5	1-4'		24	6	Clay, silty

Lambert and Associates

Project No.:	M85008GE
Date:	2/13/85
Figure:	B6



ASTM D698

ASTM D1883

CBR at 109.7 pounds per cubic foot dry density equals 6.5

Based on "Thickness Design-Asphalt Pavements for Highways and Streets", MS-1 by the Asphalt Institue, dated September 1981

R equals 15

APPENDIX C

Guide Specifications for Placement of Compacted Fill

GENERAL

A soils engineer shall be the owner's representative to observe and test the earthwork placement, moisture content and compaction. The soils engineer shall review the fill materials and the methods of placing and compaction and shall give written results of observations and test results.

CLEARING AREA TO BE FILLED

All vegetation, rubbish, and other deleterious matter shall be removed from the area to receive fill, and disposed of. Frozen material shall be removed. Frozen material may not be used as compact fill. Areas of loose, low density, spongy or saturated material not removed by clearing shall be removed.

SCARIFYING AND COMPACTING AREA TO BE FILLED

All organic matter and frozen material shall be removed from the surface upon which the fill is to be placed and the surface shall then be plowed or scarified to a depth of at least six inches and smoothed until the surface is free from ruts, hummocks or other uneven features which would tend to prevent uniform compaction.

After the area for the fill has been cleared, frozen material removed and the area plowed or scarified where necessary, it shall be disced or bladed until it is uniform and free from large clods. The surface should then be brought to the proper moisture content and compacted to a density specified below.

FILL MATERIAL

Materials for the fill should consist of materials reviewed by the soils engineer. The materials used shall be free from organic matter, frozen material and other deleterious substances and shall not contain rocks or lumps having a diameter of more than six inches.

DEPTH AND MIXING OF FILL LAYERS

The selected fill material shall be placed in horizontal layers, not to exceed six inches compacted thickness, or eight inches loose thickness. Each layer shall be spaced evenly and shall be thoroughly mixed during the spreading to provide uniformity of material in each layer.

MOISTURE CONTENT

The contractor may be required to add the moisture to the fill material in the excavation if, in the opinion of the soils engineer, it is not possible to obtain uniform moisture content by adding water during placement and compaction. Additionally, the contractor shall not place backfill material which exceeds the maximum moisture content specification, unless the material is left to aereate or blended with drier material to achieve the specified moisture content. Compacted fill should be placed at a moisture content within the limits, as defined by

the geotechnical engineer. Optimum moisture content is defined as the moisture content corresponding to the maximum density of a labortory compaction test performed according to ASTM D1557-70.

COMPACTED DENSITY

After each layer has been placed, mixed and spread evenly at the specified moisture content, it shall be thoroughly compacted to a minimum percent of maximum density as determined by the geotechnical engineer. Maximum density is defined as the highest density attained from the laboratory compaction test performed according to ASTM D1557-70.

COMPACTION METHOD

Compaction shall be by suitable compaction equipment. We suggest a smooth drum, vibratory or pneumatic tire roller for granular soils and a sheepsfoot or segmented roller for cohesive soils. Compaction shall be performed while the material is at the specified moisture content. Compaction of each layer shall be continuous over its entire area and the compaction equipment shall make sufficient passes to provide that the required density has been obtained.

FIELD TESTING OF DENSITY AND MOISTURE CONTENT

Field density and moisture content tests shall be made by the soils engineer during construction of each layer of fill. The frequency of testing will be determined by the soils engineer in the field, depending on the conditions encountered. Density and moisture content tests shall be performed in accordance with ASTM D1556 using a four or six inch sand cone, or ASTM D2922 and D3017 with nuclear density devices and methods.

OBSERVATION AND TESTING

Observation and testing by the soils engineer shall be continuous during the fill and compacting operations so that the intent of the geotechnical recommendations can be properly interpreted and the results of the observations and tests can be reported upon the completion of the project.

SEASONAL LIMITATIONS

No fill material shall be placed upon frozen subgrade, nor placed, spread or rolled while it is frozen or thawing, or during unfavorable weather conditions. When the work is interrupted by heavy rain, snow or frost penetration, fill operations shall not be resumed until the soils engineer indicates that the moisture content and density of the previously placed fill are as specified.

REVIEW SHEET SUMMARY

FILE NO. 24-85 TITLE HEADING 20-unit housing DUE DATE 9/13/85

ACTIVITY - PETITIONER - LOCATION - PHASE - ACRES Location: Little Bookcliff and Wellington Avenues, Grand Junction, CO Petitioner: Wellington V (A Partnership) c/o Sam Haupt

PETITIONER ADDRESS c/o Sam Haupt P.O. Box 363 Grand Junction, CO 81502

ENGINEER Dana Larson Roubal, Inc.

DATE REC.	AGENCY	COMMENTS
9/4/85	Building Dept.	Colorado State law requires that a state licensed architect design the structures. Soils test for foundation design is required. Would recommend early submittal of architectural drawings for review for Code compliance. Drainage is extremely important on this site.
9/6/85	Mtn. Bell	No objections.
9/9/85	Parks & Rec.	Landscaping okay. If this qualifies for open space fee, we need appraisal.
9/9/85	Public Works	Who is going to build the cul-de-sac shown on the site plan? A drainage study must be submitted for review by the City Engineer and Grand Junction Drainage District. What is the pipe system shown on the site plan which is labled SS? What is the pipe system labled S? Will need more information on these pipelines. Scale on site plan is wrong!
9/12/85	Development Dept.	This request for 20 unit housing in a Planned Business Zone is proposed as one phase. It was rezoned from multi-family to business in 1984 to accommodate a medical facility on one lot. Because of the existing uses and location proposed, this use does not present a problem in terms of current compatibility. The PB zone does allow residential if approved that way. Future uses proposed may have the compatibility question raised. The vacation request will be handled under separate submittal. The soils and subsurface soils reports make recommendations regarding building and irrigation concerns, due in part to the closeness of the lot to the Grand Valley canal. These recommendations should be followed to minimize water problems. 1. Do any of your "clients" ride bikes? If so, any bike racks should be provided (as noted on the plan) in areas easily accessible. 2. Some info. on the building appearance would be helpful for the Hearing. 3. Regarding the public right-of-way - some type of commitment (e.g. escrow, building improvements guarantee, etc.) will be required to ensure public right-of-way is, or will be, constructed. The design will have to be approved by the City Engineering Department. 4. You know your current clients; however, if this is sold or converted to regular housing, additional parking would be required. Can provisions to accommodate additional parking (if needed in the future) be provided now? The proposed layout is acceptable for the proposed use. 5. Landscaping, as shown, is acceptable; however, some buffering or screening, both in rear and front may be recommended. This will screen future businesses and also provide some security from the canal, both for these residents and others. 6. Trash pickup location should be confirmed with City's Public Works Department.

#24 85

9/12/85	Development Dept. (con't)	7. Any exterior lighting proposed? If so, it should be directional and low level as to not interfere with adjacent uses. 8. The vacation and rededication will need legal descriptions, etc. to proceed and will be handled under separate submittal. 9. Note: If the Housing Authority will be the managing agent, then they will be the first contacted for information on maintenance, right-of-way, etc., if required, unless otherwise indicated.
9/13/85	Public Service Gas:	No objections.
	Electric:	2. Request that the existing 40' easement on the north continue to the west property line.
9/13/85	Fire Dept.	Buildings must meet Uniform Fire and Building Code requirements for this type of occupancy. The Fire Dept. has some concern about the life safety for the mentally ill and would highly recommend that an automatic residential sprinkler system be installed in the buildings. This would provide life safety for the occupants and also protection for the buildings, which in turn would reduce insurance costs on the buildings. Polybulylene pipe has been approved by Underwriters Laboratories for this type of occupancy, which will reduce the initial cost of the spinkler system. Please communicate with the Fire Prevention Bureau concerning this.

MOTION: "MR. CHAIRMAN, ON ITEM #24-85 FINAL PLAN FOR CMI HOUSING UNIT, THE PETITIONER WELLINGTON V (A PARTNERSHIP) IN CONSIDERATION OF THE FINAL PLAN, I MOVE THAT WE FORWARD THIS TO CITY COUNCIL WITH RECOMMENDATION OF APPROVAL WITH THE STIPULATION THAT THERE BE PLANNING AND EXECUTION OF A FENCE, THAT A DRAINAGE STUDY BE SUBMITTED AND STAFF RECOMMENDATIONS."

Grand Junction Housing Authority
805 Main Street (303) 245-0388
Grand Junction, Colo. 81501

September 26, 1985

Mr. Bob Goldin
Development Department
Courthouse Annex
Grand Junction, CO 81501

Dear Bob,

Following are responses to the Review Sheet Summary for the Final Plan of the CMI Project, File #24-85.

A) Building Department

1) A licensed architect, James C. Pearce, will have his stamp on the drawings;

2) A soils test has previously been submitted;

3) Will work with Andy Anderson for early architectural review;

4) Drainage is indeed important on this site.

B) Parks & Rec

1) No open space required per previous discussions with you.

C) Public Works

1) Seller of property to build cul-de-sac and road as shown on site plan. This is spelled out in Seller/Buyer Contract for Sale, previously submitted to the Development Department;

2) A drainage study has been previously submitted. Please have Public Works contact Kelly Wilson of Dana Larson Roubal Inc. (our architect) for any additional information they may need;

3) SS = storm sewers; S = sanitary sewer;

4) Scale should read 1" = 10'.

D) Development Department

1) Bike racks are shown on site plan as being located under exterior stairs;

2) A model of the building was provided at the public hearing;

#24 85

#24 85

3) Regarding the public right-of-way, please see the response to C1 above;

4) A parking survey of current Mental Health Center clients show approximately 10% own vehicles. Our plans show 18 spaces, almost a 1:1 ratio. Clients will be low-income and therefore will not have boats, RV's, etc. If project ever sold, additional area of 18 spaces could be provided. Sixteen of 20 units are one-bedroom;

5) A fence will be constructed along north end of property to screen and provide security from canal;

6) Trash pickup will be confirmed with Public Works;

7) Exterior lighting is shown on site plan and will be standard pole-mounted lighting;

8) Vacation and rededication of easement will be handled under separate submittal;

9) Housing Authority, as managing agent, should be contacted first for any maintenance problems.

E) Public Service

1) There is no existing 40' easement on the north. Please clarify this item.

F) Fire Department

1) Suggestion is a good one and will be looked at in terms of budget considerations. Building will, of course, meet Uniform Fire and Building Codes.

Bob, please contact me if you should need any further information.

Sincerely,

Paul Malinowski
Executive Director

PM/dw

cc: Kelly Wilson
Jay Baldi

#24 85

development summary

File # 24-85 Name CMI Unit Housing Date 9/25/85

PROJECT LOCATION: North of Wellington on the northeast corner of Little Bookclif and the Grand Valley Canal.

PROJECT DESCRIPTION: A request for a final plan of 20 units for housing in a Planned Business zone (PB). The owner is Wellington V, the petitioner is Health Services Program, Inc., and the representative is the Grand Junction Housing Authority.

REVIEW SUMMARY (Major Concerns)

POLICIES COMPLIANCE	YES	NO *	TECHNICAL REQUIREMENTS	SATISFIED	NOT SATISFIED *
Complies with adopted policies	X		Streets/Rights Of Way		X
Complies with adopted criteria	X		Water/Sewer	X	
Meets guidelines of Comprehensive Plan	X		Irrigation/Drainage	X	
			Landscaping/Screening	X	
			Other: compatibility	X	

* See explanation below

All technical issues have been met with the exception of securing an improvements guarantee for the improvements of Little Bookcliff. The petitioner has indicated this will be provided in the purchase agreement. We would require with approval some guarantee prior to the transaction of sale. Because this is a mixed use area, and housing going in first, some problems may occur for future business activities going in.

STATUS & RECOMMENDATIONS: No adverse comments were received. If the improvements guarantee can be secured, all other technical issues being resolved, the project is compatible with the existing area.

Planning Commission Action On September 24, 1985 the Grand Junction Planning Commission recommended approval subject to staff comments and having the project provide a fence for security along the Grand Valley Canal.

#24 85 #24 85

OFFICE ACTION SHEET

Acres .80
Units 20
Density 25/acre

FINAL PLAN

File No. #24 85
Zone PR
Tax Parcel Number 2945-111-20-004

Activity Housing for mentally ill
Phase
Common Location Little Bookcliff & Wellington Avenues, Grand Junction

Date Submitted _____ Date Mailed Out _____ Date Posted _____
_____ day Review Period Return by _____
'x' dont need O-ck if needed
Open Space Dedication (acreage) _____ Open Space Fee Required $ _____ Paid Receipt # _____
Recording Fee Required $ _____ Paid (Date) _____ Date Recorded _____

review agencies

review agencies	A	B	X	X	E	F	G	H	X	J	K	L	M	N	O	X	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	X	FF	GG
Development Dept.	●	●	●	●		●	●	●	●		●	●	●	●		●	●	●	●		●	●	●	●		●	●	●	●		●	●	●
City Public Works	●	●	●			●					●		●	●		●	●	●	●		●	●	●	●		●							
City Engineer	●	●	●			●					●	●	●	●		●	●	●	●		●	●	●	●		●							
Transportation Engineer	●	●	●			●							●	●		●	●	●	●		●	●	●	●		●							
City Parks/Recreation	●	●	●	●		●							●	●		●	●	●	●		●	●				●							
City Fire Dept.	●	●	●																														
City Police Dept.	●	●	●																														
County Planning	●	●	●																														
County Engineer	●	●	●																														
County Health	●	●	●																														
County Parks/Recreation	●	●	●										●	●		●	●	●	●		●	●				●							
Comprehensive Planning	●	●	●										●	●		●	●	●	●		●	●				●							
Floodplain Administration	●	●	●						●				●	●		●	●	●	●		●	●				●							
G.J. Dept. of Energy	●	●	●										●	●		●	●	●	●		●	●				●							
Walker Field	●	●	●										●	●		●	●	●	●		●	●				●							
School District	●	●	●																														
Irrigation	●	●	●																														
Drainage GT	●	●	●																														
Water (Ute, Clifton)	●	●	●																														
Sewer Dist. (FV, CGV, OM)	●	●	●																														
Mountain Bell	●	●	●										●	●		●	●	●	●		●	●				●							
Public Service (2 sets)	●	●	●										●	●		●	●	●	●		●	●				●							
State Highway Dept.	●	●	●										●	●		●	●	●	●		●	●				●							
State Geological	●	●	●								●	●	●	●		●	●	●	●		●	●				●							
State Health Dept.	●	●	●										●	●		●	●	●	●		●	●				●							
GJPC (7 packets)	●	●	●													●									●				●	●	●		
CIC (9 packets)	●	●	●													●									●				●	●	●		
OTHER Bldg Dept	●	●	●													●									●				●	●	●		
totals																																	

BOARDS

BOARDS	DATE	
GJPC	9/25/85	Rec. of Approval (subject to Staff Comments - fence along Canal)
CC	10/2/85	Appr. C4 & subject to drainage being resolved prior to bldg permit application

STAFF

Bob
244-1648

APPLICATION FEE REQUIREMENTS

225 at submittal Ck to City to GJ refer to #21-8
CMI 20 unit housing

Original
Do NOT Remove
From Office

File

Grand Junction Planning Department
559 White Ave. Room 60
Grand Junction, Colorado 81501-2643

December 30, 1985

Mr. Paul Malinowski
Grand Junction Housing Authority
805 Main Street
Grand Junction, CO 81501

CERTIFIED

RE: Revised Landscape Plan for CMI

Dear Paul:

On Monday, December 23rd, I received the revised landscape plan from Kelly Wilson. He indicated that you were requesting not only a major reduction in total landscaping as a cost cutting measure, but also that the developers wanted to defer planting the landscaping until "some future date." Below is a summary of the landscape revisions I noted from my review of the plan, along with several comments.

The garbage dumpster is not being shown on the revised plan. Where will it be located and what type of screening will be used?

The number of trees has been reduced from 13 to 7, and at least one tree that would have provided some shade to the parking lot has been deleted. This is undesirable because:

Section 5-5-1:G of the Grand Junction Zoning and Development Code requires that "When...parking spaces for more than 15 cars,...at least 5% of the total area of the parking lot shall be used for landscaping...this area may be required to have shade trees."

With the minimum requirement of 18.5' long parking stalls and the required 25' aisle (if 9' wide stalls are still planned), the parking lot will be at least 43.5' wide by 206' for a total area of 8,961 square feet of parking lot. Five percent of that will be 448 square feet of landscaping required within the parking lot. By deleting the landscape island next to the handicap parking, there won't be sufficient area to meet Section 5-5-1:G.

#24 85

Planting of Cottonwood trees is not acceptable. Ash trees (Mountain or White) would be much preferred by City Parks Department personnel as well as this department. The shrubbery has been reduced from approximately 2,000 square feet to two serviceberry bushes (these are shown as being 13' across, which presents an unrealistic picture) and sod lawn. This is acceptable, though not as desirable as with the previous plan.

I feel that the overall reduction of landscaping can be accepted providing the five percent provision of Section 5-5-1:G is met. The policy of the City has been consistent in the past that with new project construction, all landscaping must be completed prior to the release of the Certificate of Occupancy (C.O.). Although I can sympathize with the need to reduce costs, I don't feel that it is appropriate to waive policy under these circumstances. If you feel that this is unjust, a review hearing can be scheduled before the Grand Junction Planning Commission for a revised final plan, and they can make the final determination.

If I can answer questions or be of any assistance, please feel free to contact me at 244-1648.

Sincerely,

Mike Sutherland

Michael E. Sutherland
City Development Official

MES/tt

xc: Kelly Wilson
GJPC members

Note: Per discussion w/ Kelly on 1-22-86 they are going back to the original landscape plan so disregard the revised plan rec'd on Dec. 23, 1985

CMC Housing file

January 29,1986

DANA LARSON ROUBAL & ASSOC.
225 North 5th, Suite 115
Valley Federal Plaza
Grand Junction, CO 81501

Re: Health Service Programs' Housing Project

Gentlemen:

I received plans and storm drainage calculations for the proposed housing project on January 23, 1986. I have reviewed the storm drainage study and the revised drainage study and take no exception to the calculations as submitted.

In order to minimize silting and other maintenance problems in the underground drainage pipes, I recommend that the historic runoff rates be controlled at the inlets rather than through an orifice at the downstream end of each pipeline. Access to and maintenance of the inlets will be much easier than maintenance of the pipeline. From the calculations submitted, there appears to be adequate detention volume on the surface without the storage volume in the pipelines.

For maintenance purposes, I would also recommend that the drainage pipe size be increased from 8" to 12" diameter.

It is my understanding that the developer will design and construct the extension of Little Bookcliff Court to the proposed housing development. Plans and specifications for the street construction should be in accordance with City Standards and must be approved by this office prior to any construction. Right-of-way for the street and cul-de-sac must also be provided by the developer.

Since the drainage from the proposed development will discharge into the Buthorne drain, drainage plans and calculations should be submitted to the Grand Junction Drainage District for their review.

Please let me know if you have any questions regarding these items.

Sincerely,

J. Don Newton, P.E.
City Engineer

JDN:pb

cc: John Ballagh, G.J. Drainage Dist.
Bob Goldin
John Kenney
Jim Shanks

Mike Sutterley

City of Grand Junction, Colorado
81501-2668
250 North Fifth Street

April 15, 1987

Mr. George Trosky, IAI
Lescher and Mahoney
3024 East Main
Suite 100
Farmington, New Mexico 87401

Dear Mr. Trosky:

I have received and reviewed your plans for the extension of the water and sewer mains and Little Bookcliff Avenue to the Health Services Programs Housing Project and have the following comments:

1. The proposed pavement structure for Little Bookcliff Avenue is the same as that in the existing street and should be adequate. With the close proximity of the Grand Valley Canal, there is a possibility of seepage from the canal causing wet subgrade conditions in this vicinity. If this is the case, additional excavation and subgrade stabilization materials may be required in the utility trenches and at the street subgrade. I would recommend that you investigate the soil conditions in this area prior to proceeding with construction.

2. Who will provide construction staking, inspection and materials testing for construction of the street and utilities? These services are required and are the developers responsibility. If desired, Grand Junction Engineering Department will provide these services and bill the developer for labor, testing and material costs. The developer or his Engineer will also be responsible for administration of all construction contracts.

Upon stamping and signing of the construction drawings by a professional engineer registered in the State of Colorado, you may consider your plans approved for construction. Please notify me at least two weeks prior to the date construction is scheduled to begin.

Sincerely,

J. Don Newton

J. DON NEWTON
City Engineer

xc: Jim Shanks
Mike Sutherland

COLORADO WEST REGIONAL MENTAL HEALTH CENTER

COMMUNITY SUPPORT PROGRAM

1115 Main Street
Grand Junction, Colorado 81501
Telephone (303) ~~245-6422~~ 434-0593

July 13, 1987

Mike Sutherland
Planning Department
Grand Junction, CO

RE: CMI Apartment Project
2656 Little Bookcliff Dr.
Grand Junction, CO.

Dear Mr. Sutherland:

As our project nears completion, we have confronted two problems relating to project redesign and the weather.

We have installed sod instead of grass seed due to a slope condition on the canal that was a result of the replacement of a Grand Junction Drainage pipe. This prevented an erosion problem that was bound to occur with hydro-seeding.

With regards to your office, we have been advised to delay the required plantings on the property until the fall when the weather is more conducive to the survival of the plants.

It is my understanding that we will need permission from your office in order to delay this work.

The Mental Health Center insures that the proper plantings are accomplished by October 1, 1987.

Thank you for your help.

Sincerely,

John F. Baldi, LSW 11
Associate Director

Spoke w/ Dave Meyer 7-23-87
Dave gave verbal guarantee that the bike racks would go in asson as some acceptable looking brands are located.
M.S.

cc: Dave Meyer, GJHA
John Pettit, HUD
John Hesslink, Schauer Construction

City of Grand Junction, Colorado
81501-2668
250 North Fifth Street

September 3, 1987

Mr. George Trosky
Lescher and Mahoney
3024 East Main, Suite 100
Farmington, New Mexico 87401

Re: Little Bookcliff Street Construction

Dear Mr. Trosky:

The extension of Little Bookcliff Avenue has been completed by the contractor and the final inspection has been done by the City. Enclosed are copies of road base compaction tests, a tabulation of inspection man hours and the Contractor's drawing of "As Built" conditions.

Upon receiving "As Built" Construction plans on reproducible mylar and payment for the City's construction inspection time, the street extension will be accepted by the City for future maintenance. Please call if you have any questions or require additional information.

Sincerely,

J. Don Newton
City Engineer

xc: File
Mike Sutherland - City Planning
Jim Shanks - Public Works
Doug Cline - Streets Supervisor

JDN:skw

RECEIVED GRAND JUNCTION
PLANNING DEPARTMENT
SEP 01 1987