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PETITION

# **DEVELOPMEN** PLICATION

Signature of Property Owner(s) - Attach Additional Sheets if Necessary

PHASE

Community Development Department 250 North 5th Street Grand Junction, CO 81501 (303) 244-1430

SIZE

A	Receipt
	File No. 470 92

LAND USE

We, the undersigned, being the owners of property situated in Mesa County, State of Colorado, as described herein do hereby petition this:

LOCATION

ZONE

[ ] Subdivision Plat/Plan	[] Minor [] Major [] Resub					
[] Rezone				From: To:		
Planned Development	[] ODP Prelim [] Final	11.6 ac.	West of Alpine Meadows Subdivision	PP-4.2	Residential	
[] Conditional Use						
[] Zone of Annex						
[] Text Amendment						
[] Special Use						
[] Vacation					[ ] Right-of-Way [ ] Easement	
Sedona Patrership Name 40 William Shun 1010 Crestvie W Address P.O. Box 248	ct. 2370	nas E. Bens Benson So. Pizga Address		Thomas A. Lo Name  537 Fruitwo Address	que pod Dr. fion, co. 81504	
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foregoing information is tra and the review comments	that we have familiarize ue and complete to the s. We recognize that	ed ourselves wit best of our knowe or our repre	th the rules and regulation wledge, and that we assur- esentative(s) must be pres	me the responsibility to meent at all hearings. In t	paration of this submittal, that the nonitor the status of the application he event that the petitioner is not	
represented, the item will on the agenda.	be dropped from the a	genda, and an	additional fee charged to	cover rescheduling expe	nses before it can again be placed	
Signature of Person	Zømøleting Applica	ation			Date	
Thomas of	9. Benson				10/22/92 Date 10/22/92	

210135100007 & 008 Charlie Plsec 771 27 Road Grand Junction, & 81506

270135100062 Harley Rudofsky 780 26 1/2 Road Grand Junction, CO 81506

270135100063 Virginia A. Saccomanno 780 26 1/2 Road Grand Junction, CO 81506

Alpine Meadows Devel. Corp. PO box 1752 Grand Junction, CO 81502

2701351049011 Jay E. Gonyeau 2675 Springside Ct. Grand Junction, CO 81506

2701351047022 David Schoening 653 Eastcliff Dr. Grand Junction, CO 81506

2701351049005 W.D. Garrison PO Box 1633 Grand Junction, CO 81502

2701351049006 Craig W. Springer PO Box 2753. Grand Junction, CO 8160.

2701351049007 David W. Terry 3120 Beachwood St. Grand Junction, CO 81506

2701351049008 Garry W. Lambert 2449 Applewood Pl. Grand Junction, CO 81606 Criginal
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## PROJECT NARRATIVE PRELIMINARY DEVELOPMENT PLAN FOR SEDONA SUBDIVISION

INTRODUCTION - The Sedona Subdivision property was recently annexed by the City of Grand Junction. The accompanying narrative statement and maps will provide sufficient data to assess the merits of the requested Preliminary Development Plan application. Information gained as a result of the review process will be utilized in the preparation of the final construction documents and final plat.

LOCATION - Sedona Subdivision contains approximately 11.6 acres, and is also known as La Casa De Dominguez, Filing No. 3. Sedona Subdivision is located in the North Grand Junction area, 500 feet south of "H" Road and 850 feet west of North 12th. Street. The property is located in part of the NE 1/4 of Section 35, Township One North, Range One West, of the Ute Meridian.

EXISTING LAND USE - The only structure on the property is a single family residence under construction. A small pond located near the south boundary of the property is one of the most outstanding features of the property. Even though irrigation water is available, the site is in a semi-arid No apparent agricultural production has occurred. The site is somewhat affected by an existing flows to existing drainage channel which the Topography of the property is considered to be "gently The land within Sedona Subdivision rolling" in nature. slopes towards the pond at a maximum rate of ten percent. The subject property is zoned PR 4.5 by the City of Grand Junction.

SURROUNDING LAND USE - The most dominate use in the area surrounding the subject property is the Alpine Meadows deadjoins the east property line. velopment which Meadows is fully developed an approximately 20% built out. Garrision Ranch, an existing large lot single family subdivision containing 5 lots adjoins the north boundary of Sedona Subdivision. The balance of the land surrounding the subject property is considered to be of moderate intensity primarily consisting of larger tracts of land with single family residents and agricultural production. The Preliminary Site Development Plan contains a Surrounding Land Use Matrix which illustrates specific uses amd zoning desigantions which adjoin the subject property.

PROPOSED LAND USE - The proposal calls for the ultimate development of 22 single family building sites on 11.6 acres. Lots range in size from 12,500 square feet to 35,000 square

within the property. All of the existing water mains are owned and maintained by the Ute Water Conservancy District. Fire hydrants will be placed throughout the development. Sufficient flows and pressure exist to provide adequate water supply for fire protection.

SANITARY SEWER - A new sanitary sewage collection system will be constructed to serve all lots within Sedona Subdivi-Due to the nature of the topography found within the property, the proposal calls for the construction of two independent collection systems. The north system will serve 7 of the 22 lots within the development and will connect to an existing sewer main stub near Jordana Road and Amber Way. Sewer service to 8 lots located along South Sedona Court will require the relocation of an existing lift station along Jordana Road to the west within Sedona Subdivision. The balance of the lots fronting on Jordana Road will utilize an esisting main located adjacent to Jordana Road. It is estimated that peak sewage flows generated by the lots within the development will be 7700 gallons per day.

ELECTRIC, GAS, PHONE & CATV - Electric, gas, and communication lines will be extended to each lot within the development from existing lines located adjacent to the proposed development. Proposed gas, electric, and communication lines will be located in a "common trench" adjacent to the dedicated road right-of-way.

IRRIGATION WATER - According to the Grand Valley Water Users Association, 0.32 cfs of irrigation water is available for use by the subject property. Irrigation water is delivered to the southwest property corner thru a series of open ditches. The proposal calls for the utilization of the existing irrigation pond as storage facility for the irrigation water. A central pressurized pumping station will be located near the pond and water to be deliver to each lot within Sedona Subdivision using an underground piped system.

SOILS - According to data contained within the Soil Conservation Service (SCS) soil evaluations, soil limitations are identified as severe for identified building areas SCS has identified three soil within Sedona Subdivision. classification within the property.

Fruita & Ravola Gravelly Loams, Class IVe

Fp Fruita Very Fine Sandy Loam, Class I

Fruita Very Fine Sandy Loam, Class IIe

The Fa soil type has the greatest limitation of the types found within the property due to the sallow depth of ground water. This soil type mapped by SCS includes the area of the property in and around the drainage swale which crosses the property.

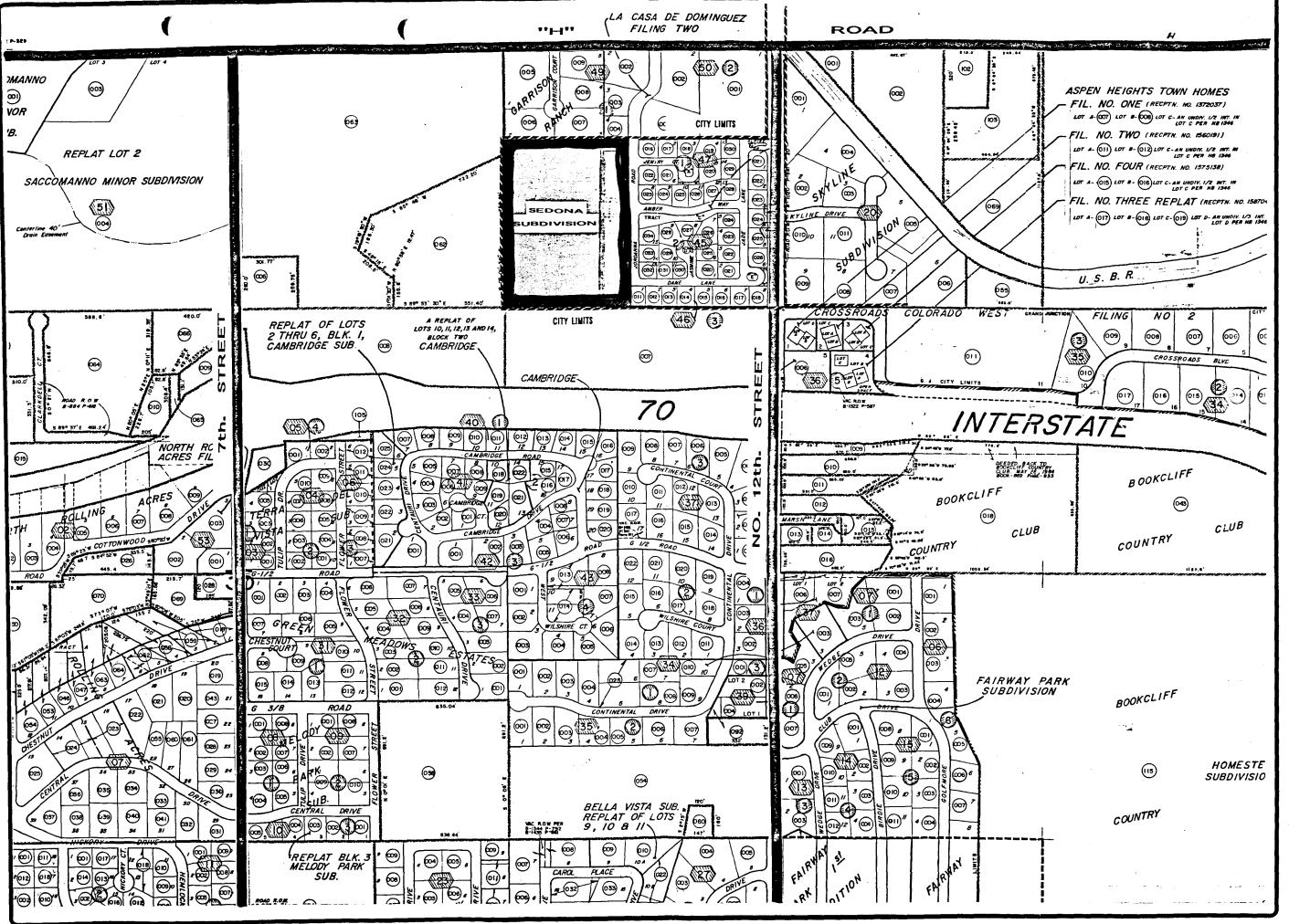
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A detailed Sub-Surface Soils Investigation has been transmitted to the City of Grand Junction's Planning and Engineering Departments under separate cover.

DRAINAGE - A Drainage Report which evaluates the impacts on existing drainage patterns has been submitted to the City Engineering Department under separate cover. Most of the future drainage will be carried on the ground surface to the proposed street system and to the existing drainage swale located on the site and ultimately to the pond. A new outlet control structure will be constructed within the pond area in a manner which will control the amount of developed storm water flows which will be discharged from the site. The site is some what affected by drainage from off-site sources particularly Alpine Meadows. According to the drainage study for Alpine Meadows its discharge rate does not exceed the historic flow rate prior to development of the property.

DEVELOPMENT SCHEDULE - The rate at which development of Sedona Subdivision, will occur is dependent upon the City's future growth and housing needs. At this point in time it is anticipated that site development will begin and be completed during the summer of 1993.

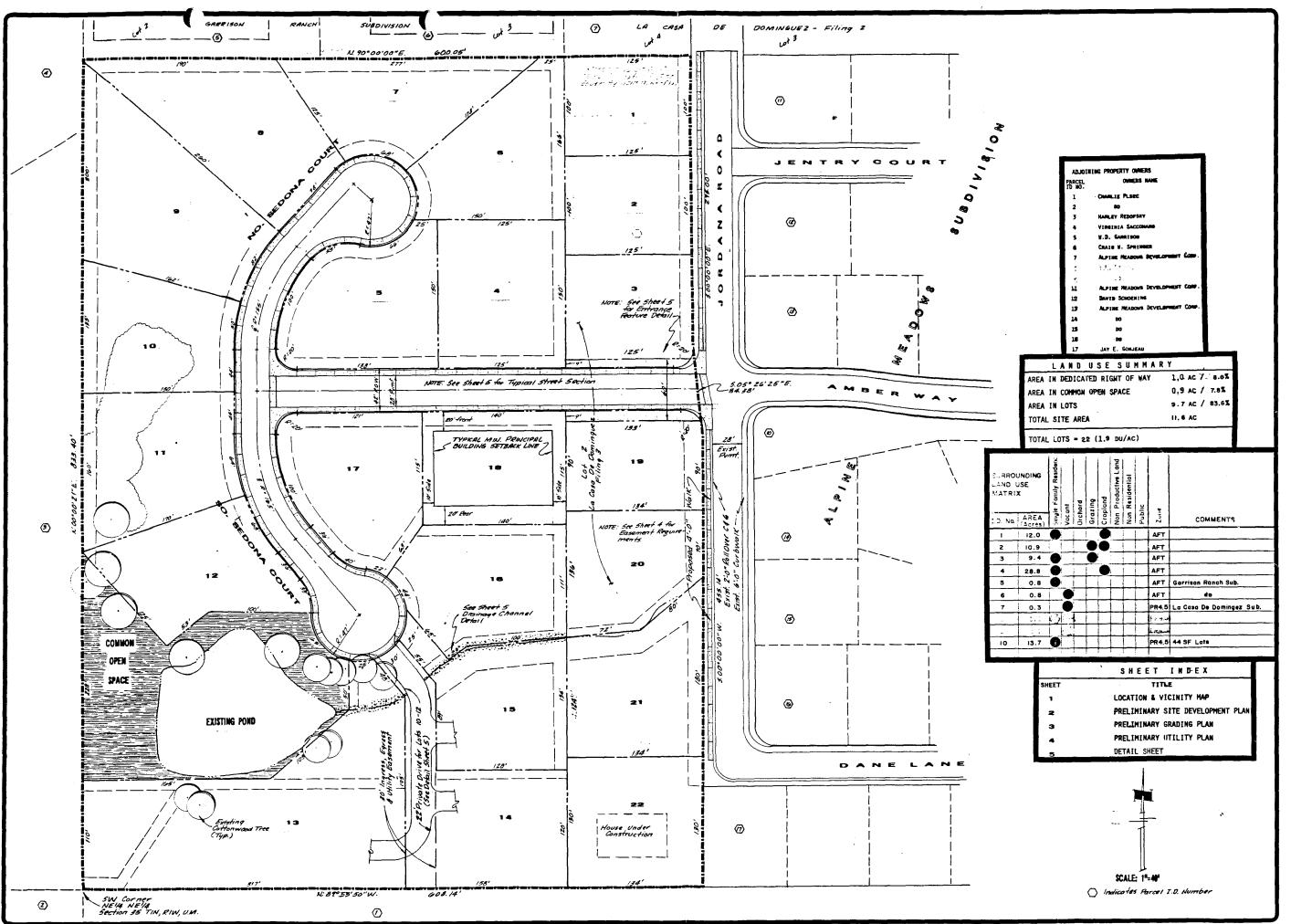


REVISIONS BY

TATE THOMAS A. LOGUE

SEDONA SUBDIVISION

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REVISIONS

THOMAS A. LOGUE

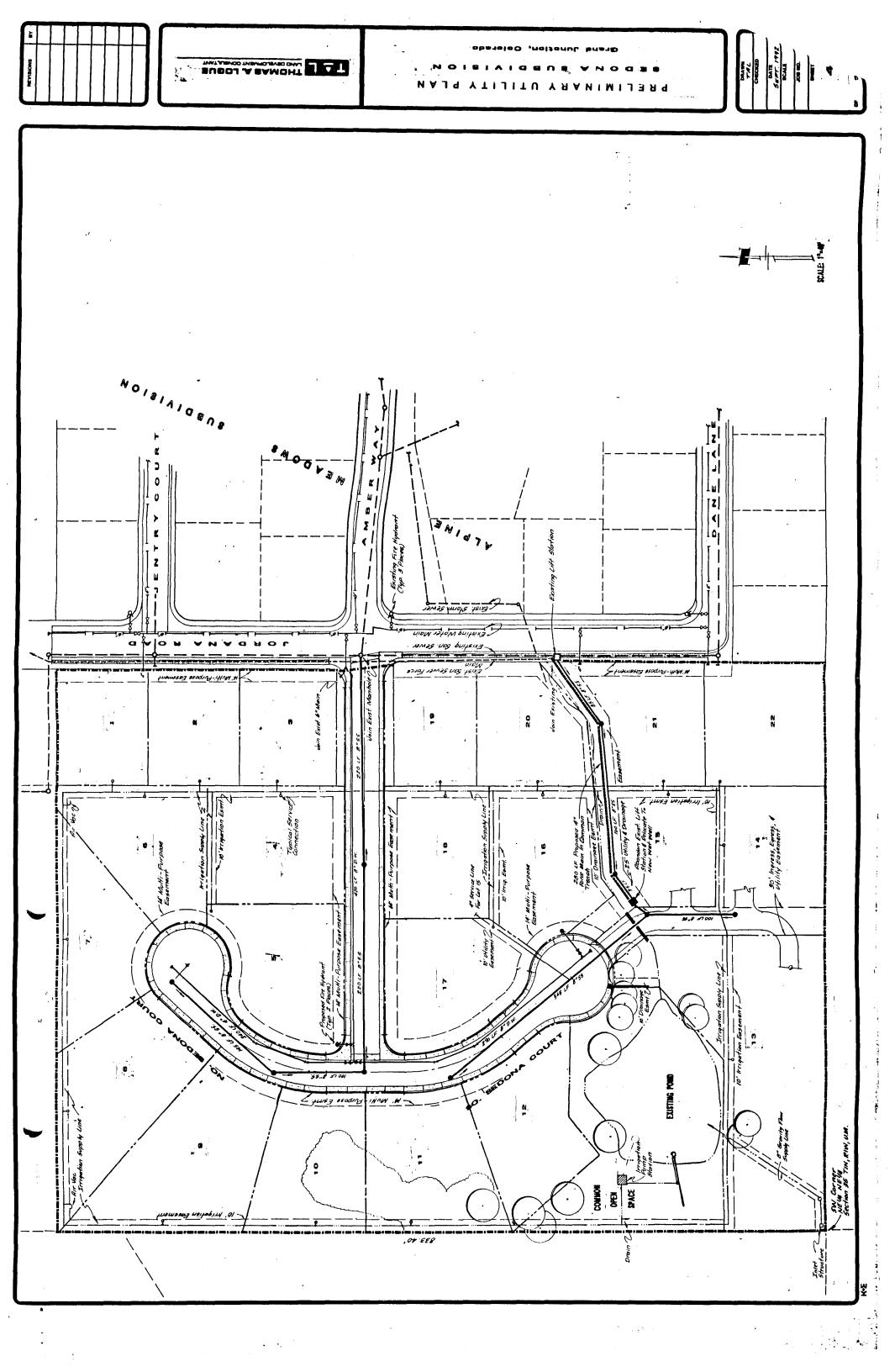
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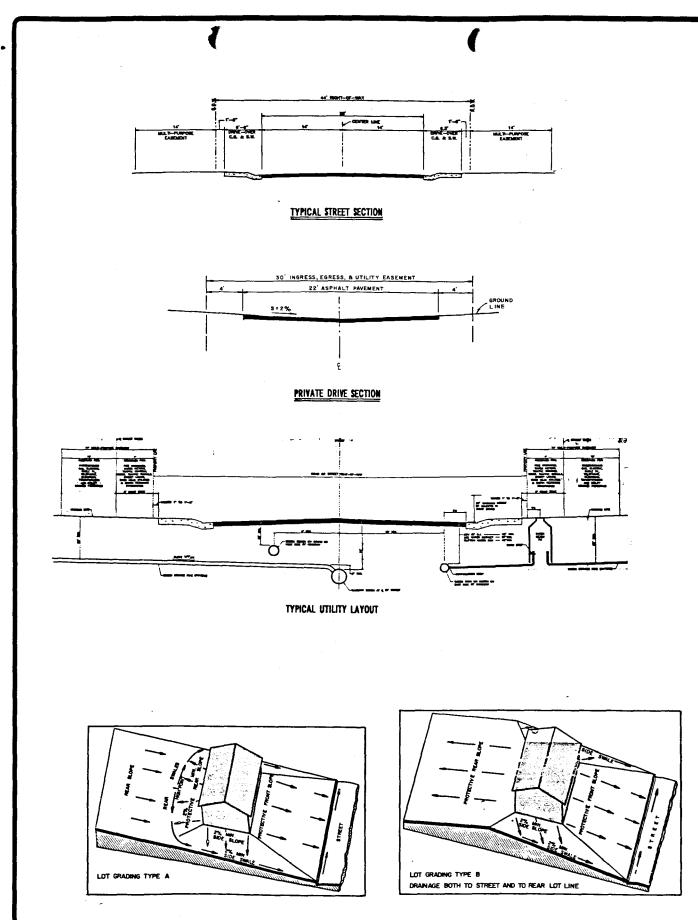
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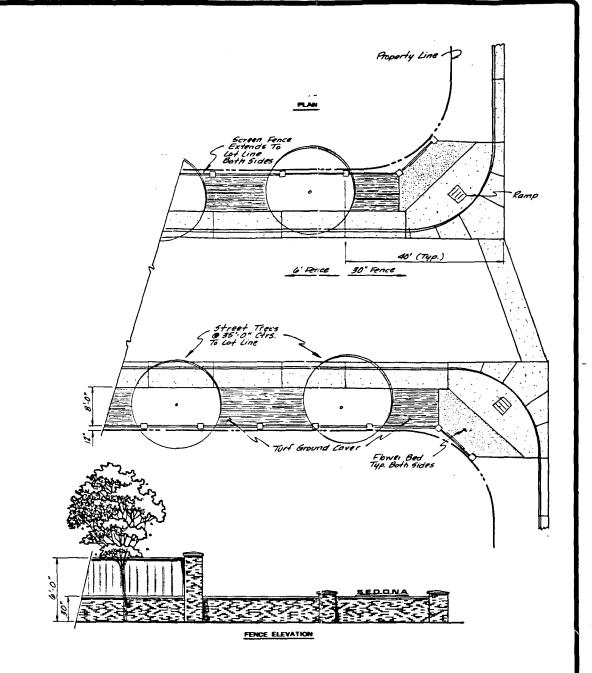
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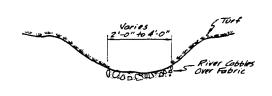
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## INTRODUCTION

#### PROJECT DESCRIPTION

This report presents the results of our gentechnical evaluation performed to determine the general subsurface conditions of the site applicable to construction of single-family residential structures. A vicinity map is included in the Appendix of this report.

To assist in our exploration, we were provided with a preliminary site development plan prepared by Thomas A. Logue. The Boring Location Plan attached to this report is based on that plan provided to us.

We understand that the proposed structures will consist of single and two-story, wood-framed buildings with possible full basements and concrete floor slabs on grade. Lincoln DeVore has not seen any building plans for this site, but structures of this type typically develop wall leads on the order of 600 to 2000 plf and column loads on the order of 5 to 16 kips.

The characteristics of the subsurface materials encountered were evaluated with regard to the type of construction described above. Recommendations are included herein to match the described construction to the soil characteristics found. The information contained herein may or may not be valid for other purposes. If the proposed site use is changed or types of construction proposed, other than noted herein, Lincoln DeVore should be contacted to determine if the information in

this report can be used for the new construction without further rield evaluations.

## PROJECT SCOPE

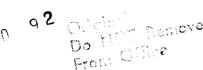
The purpose of our exploration was to evaluate the surface and subsurface soil and geologic conditions of the site and, based on the conditions encountered, to provide recommendations pertaining to the geotechnical aspects of the site development as previously described. The conclusions and recommendations included herein are based on an analysis of the data obtained from our field explorations, laboratory testing program, and on our experience with similar soil and geologic conditions in the area.

This report provides site specific information for the construction of a single-family residential structures. Included in this report are recommendations regarding general site development and foundation design criteria.

The scope of our geotechnical exploration consisted of a surface reconnaissance, a geophoto study, subsurface exploration, obtaining representative samples, laboratory testing, analysis of field and laboratory data, and a review of geologic literature.

Specifically, the intent of this study is to:

- 1. Explore the subsurface conditions to the depth expected to be influenced by the proposed construction.
- 2. Evaluate by laboratory and field tests the general engineering properties of the various strata which could influence the development.



- 3. Define the general geology of the site including likely geologic hazards which could have an effect on site development.
- 4. Develop geotechnical criteria for site grading and earthwork.
- 5. Identify potential construction difficulties and provide recommendations concerning these problems.
- 6. Recommend an appropriate foundation system for the anticipated structure and develop criteria for foundation design.

#### FIELD EXPLORATION AND LABORATORY TESTING

A field evaluation was performed on October 5, 1992, and consisted of a site recomnaissance by our gestechnical personnel and the drilling of seven exploration borings. These seven shallow exploration borings were drilled within the proposed build lots near the locations indicated on the Boring Location Plan. The seven exploration borings were located to obtain a reasonably good profile of the subsurface soil conditions. All exploration borings were drilled using a CME 45-B, truck-mounted drill rig with continuous-flight auger to depths of approximately 13 to 18 feet. Samples were taken with a standard split spoon sampler, California lined sampler, thin-walled Shelby tubes, and by bulk methods. Logs describing the subsurface conditions are presented in the attached figures.

Laboratory tests were performed on representative soil samples to determine their relative engineering properties. Tests were performed in accordance with test methods of the American Society for Testing and Materials or other accepted standards. The results of our laboratory tests are included in this report. The in-place moisture content and

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the standard penetration test values are presented on the attached drilling logs.

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## FINDINGS

## SITE DESCRIPTION

The project site is located in the Northeast Quarter of Section 35, Township 1 North. Range 1 West of the Ute Principal Meridian, Mesa County. Colorado. More specifically the site is located immediately west of the Alpine Meadows Subdivision and immediately south of the Garrison Ranch Subdivision. The site is located south of G Road and between 26 1/2 and 27 Roads.

The topography of the site is gently rolling hillside, with an overall gradient to the south. The exact direction of surface runoff on this site will be controlled by the proposed construction and therefore will be variable. In general, surface runoff is expected to travel to the south, eventually entering the existing drain ditches of the area and eventually the Colorado River. Surface and subsurface drainage on this site would be described as fair and the subsurface drainage would be described as poor.

# GENERAL GEOLOGY AND SUBSURFACE DESCRIPTION

The geologic materials encountered under the site consist of fine coarse-grained, low to medium density alluvial silts, sands, and gravels, which overlie the Mancos Shale Formation. The geologic and engineering properties of the materials found in our seven exploration borings will be discussed in the following sections.

The surface soils on this site consist of a series of silty clay and sandy clay soils which are a product of mud flow/debris flow features which originate on the

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south-facing slopes of the Bookcliffs. These mud flow/debris flow features are a small part of a very extensive mud flow/debris flow complex along the base of the Bookcliffs and extending to the Colorado River. Utilizing recent events and standard evaluation techniques, this tract is not considered be within with an active debris flow hazard area. The soils are an erosional product of the upper Mancos Shale and Mount Garfield Formations which are exposed on the slopes of Bookcliffs. The soils contained within these mud flow/debris flow features normally exhibit a metastable condition which can range from very slight to severe. Metastable soil is subject internal collapse and is very sensitive to changes in the soil moisture content. Based on the field and laboratory testing of the soils on this site, the severity of the metastable soils can be described as low to moderate.

This soils type is usually very stratified, with layers of fairly clean sands, some sandstone, siltstone, mudstone, and shale fragments. This particular soil has been designated as Soil Type I for this report.

This Soil Type was classified as a silty sand which is poorly graded (SP/SM) under the Unified Classification System. This material is of very low plasticity, of low to moderate permeability, and was encountered in a low to medium density, moist condition. Some strata may undergo mild expansion with the entry of small amounts of moisture, but will undergo long-term consolidation upon the addition of larger amounts of moisture. This soil will settle after being loaded. The maximum



allowable bearing capacity for this soil was found to range from 900 to 1400 psf maximum, with no minimum dead load pressure required for the soil horizons greater than five feet above the Mancos Shale Formation. The finer grained portion of Soil Type No. 1 contains sulfates in detrimental quantities.

Some strata of the upper alluvial soils is quite fine grained and, in this particular area, was found to be very silty. This soil is designated as Soil Type II in this report.

This Soil Type was classified as a silty sandy silt (ML) under the Unified Classification System. This material is of low plasticity, of low to moderate permeability, and was encountered in a low density, moist condition. It undergoes very mild expansion with the entry of small amounts of moisture, but will undergo long-term consolidation upon the addition of larger amounts of moisture. This soil will settle after being loaded. The maximum allowable bearing capacity for this soil was found to be 800 psf, with no minimum dead load pressure required unless the Mancos Shale Formation is within five feet of this particular horizon. The finer grained portion of Soil Type No. II contains sulfates in detrimental quantities.

The entire site is underlain by the Mancos Shale Formation which is considered to be bedrock in this area. The Mancos Shale is described as a thin-bedded, drab, light to dark gray marine shale, with thinly interbedded fine grain sandstone and limestone layers. Some portions of the Mancos Shale are bentonitic, and therefore, are highly expansive. The majority of the shale, however, has only a moderate expansion

potential. Formational shale was encountered in all test borings at depths ranging from 6 to 11 feet below the existing ground surface. It is anticipated that this formational shale will affect the construction and the performance of the foundations on the site.

This soil type of this particular horizen of the Mancos Shale was classified as a sandy silt (ML) under the Unified Classification System. Thin interbeds of silts and some silty clays were observed in the samples and were The Standard Penetrautilized for the soil expansion testing. Tests ranged from 21 blows per foot to over 100 blows foot. Penetration tests of this magnitude indicate that the somewhat weathered near the shale surface and of medium high density. The moisture content varied from 11.7 % to 19.5 indicating a relatively moist soil. This soil is plastic and sensitive to changes in moisture content. With decreased moisture, it will tend to shrink, with some cracking upon desiccation. Upon increasing moisture, it will tend to expand. sion tests were performed on typical samples of the soil expansive pressures on the order of 1700 psf were found to typical for remolded samples of the silty clay strata of Mancos Shale. The allowable maximum bearing value was found be on the order of 4600 psf. A minimum dead load of 1700 will be required. These allowable bearing capacities shallow foundation system is utilized.

The boring logs and related information show subsurface conditions at the date and location of this

exploration. Soil conditions may differ at locations other than those of the exploratory borings. If the structure is moved any appreciable distance from the locations of the borings, the soil conditions may not be the same as those reported here. The passage of time may also result in a change in the soil conditions at the boring locations.

Soil Types I and II are representative of soils with low to moderate metastable properties. The amount of effect these metastable soils would have on a shallow foundation system will depend entirely upon the thickness of these soils beneath the foundation system and the actual soils which are encountered on each site. Inspection of the drilling logs indicates these soils are quite variable across the subdivision and may change quite rapidly. A visual observation of these soils is usually not sufficient to determine how much rearrangement of the granular soil structure can be expected with wetting and load application. Specific laboratory testing is normally required to arrive at site-specific recommendations regarding the stability of these soils.

## GROUND WATER:

No free water surface was encountered in any of the test borings to the depths drilled which are located north of the existing pond. However, moist to very wet conditions were encountered in all test borings. Ground water was encountered in Exploration Boring No. 7, generally south of the pond area immediately above the Mancos Shale Formation. In our opinion this wet condition is the result of seepage from irrigation ditches and from irrigation practices in the

vicinity. Due to the high moisture conditions encountered, it is recommended that basement or half basement foundations be used on this site only after the specific lot characteristics are evaluated. The conditions which would affect basement or half basement conditions would include lot grading around the proposed structure which would include both on the lot and off the lot in question, location of existing irrigation and drainage features, and final foundation elevation relative to the surrounding site topography. It is recommended that all floor slabs be constructed over a capillary break and vapor barrier.

Because of capillary rise, the soil zone within a few feet above any existing seasonal water levels or future water levels will be quite wet. Pumping and rutting may occur during the excavation process, particularly if the bottom of the foundations are near the capillary fringe. Pumping is a temporary, quick condition caused by vibration of excavating equipment on the site. If pumping occurs, it can often be stopped by removal of the equipment and greater care exercised in the excavation process. In other cases, geotextile fabric layers can be designed or cobble sized material can be introduced into the bottom of the excavation and worked into the soft soils. Such a geotextile or cobble raft is designed to stabilize the bottom of the excavation and to provide a firm base for equipment.

Data presented in this report concerning ground water levels are representative of those levels at the time of our field exploration. Groundwater levels are subject to

change seasonally or by changed environmental conditions. Quantitative information concerning rates of flow into excavations or pumping capacities necessary to dewater excavations is not included and is beyond the scope of this report. If this information is desired, permeability and field pumping tests will be required.

Due to the proximity of the Mancos Shale Formation, there exists a possibility of a perched water table developing in the alluvial soils which overlie the shale. perched water would probably be the result of increased irrigation due to the presence of lawns and landscaping and roof run-The exploration holes indicate that the top of off. the Mancos Shale Formation has a gentle gradient to the south and that subsurface drainage would probably fairly slow. While it is believed that under the existing conditions at the time of this exploration the construction process would not be effected by any free-flow waters, it is very possible that several years after development is initiated, a troublesome perched water condition develop which will provide construction difficulties. addition, this potential perched water could create some problems for existing or future foundations on this tract. Therefore it is recommended that the future presence of a perched water table be considered in all design and construction of both the proposed residential structures and any subdivision improvements.

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#### CONCLUSIONS AND RECOMMENDATIONS

#### GENERAL DISCUSSION

No geologic conditions were apparent during our reconnaissance which would preclude the site development as planned, provided the recommendations contained herein are fully complied with. Based on our investigation to date and the knowledge of the proposed construction, the site condition which would have the greatest effect on the planned development is low to medium density alluvial soils which contain metastable strata which overlie the expansive Mancos Shale Formation.

Since the exact magnitude and nature of the foundation loads are not precisely known at the present time, the following recommendations must be somewhat general in nature. Any special loads or unusual design conditions should be reported to Lincoln DeVore so that changes in these recommendations may be made, if necessary. However, based upon our analysis of the soil conditions and project characteristics previously outlined, the following recommendations are made.

#### OPEN FOUNDATION OBSERVATION

Since the recommendations in this report are based on information obtained through random borings, it is possible that the subsurface materials between the boring points could vary. Therefore, prior to placing forms or pouring concrete, an open excavation observation should be performed by representatives of Lincoln DeVore. The purpose of this observation is to determine if the subsurface soils directly below the proposed foundations are similar to those encountered in our exploration borings. If the materials below the proposed founda-

tions differ from those encountered, or in our opinion, are not capable of supporting the applied loads, additional recommendations could be provided at that time.

## DRAINAGE AND GRADIENT:

Adequate site drainage should be provided in the foundation area both during and after construction to prevent the ponding of water and the saturation of the subsurface soils. We recommend that the ground surface around the structure be graded so that surface water will be carried quickly away from the building. The minimum gradient within 10 feet of the building will depend on surface landscaping. We recommend that paved areas maintain a minimum gradient of 2%, and that landscaped areas maintain a minimum gradient of 8%. It is further recommended that roof drain downspouts be carried across all backfilled areas and discharged at least 10 feet away from the structure. Planters, if any, should be so constructed that moisture is not allowed to seep into foundation areas or beneath slabs or pavements.

If adequate surface drainage cannot be maintained, or if subsurface seepage is encountered during excavation for foundation construction, a full perimeter drain is recommended for this building. It is recommended that this drain consist of a perforated drain pipe and a gravel collector, the whole being fully wrapped in a geotextile filter fabric. We recommend that this drain be constructed with a gravity outlet. If sufficient grade does not exist on the site for a gravity outlet, then a sealed sump and pump is recommended. Under no circumstances should a dry well be used on this site.



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The existing drainage on the site must either be maintained carefully or improved. We recommend that water be drained away from structures as rapidly as possible and not be allowed to stand or pond near the building. We recommend that water removed from one building not be directed onto the backfill areas of adjacent buildings. We recommend that a hydrologist or drainage engineer experienced in this area be retained to complete a drainage plan for this site.

To give the building extra lateral stability and to aid in the rapidity of runoff, it is recommended that all backfill around the building and in utility trenches in the vicinity of the building be compacted to a minimum of 85% of its maximum Proctor dry density, ASTM D 698. The native soils on this site may be used for such backfill. We recommend that all backfill be compacted using mechanical methods. No water flooding techniques of any type may be used in placement of fill on this site.

Should an automatic lawn irrigation system be used on this site, we recommend that the sprinkler heads be installed a minimum of 5 feet from the building. In addition, these heads should be adjusted so that spray from the system does not fall onto the walls of the building and that such water does not excessively wet the backfill soils.

Most metastable (hydrocompaction) mitigation techniques are drainage considerations. The most important drainage consideration would be the continual maintenance of positive surface drainage away from the structures at all points. Positive surface drainage conditions must be maintained both

during construction and throughout the service life of the structures. No flat areas or closed depressions should be allowed to exist anywhere on the site. Proper control of all roof runoff is extremely important. It is strongly recommended that downspout discharges be piped away from the structure. No water should be allowed to pond or stand within 30 feet of any structure.

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#### **FOUNDATIONS**

Assuming that some amount of differenmovement can be tolerated, then a conventional foundation system either placed on the native soils or reworked native soils or underlain by structural fill, placed in accordance with the recommendations contained within this report, be utilized. The foundation would consist of continuous spread footings beneath all bearing walls and isolated spread footings beneath all columns and other points of concentrated load. a shallow foundation system, resting on the properly constructed structural fill may be designed on the basis of an allowable bearing capacity of 2200 psf maximum. Foundations resting on the native soils should utilize the allowable bearing capacities given in this report for those particular soil types. Recommendations pertaining to balancing, reinforcing, drainage, and inspection are considered extremely important and must be fol-Contact stresses beneath all continuous walls should be lowed. balanced to within + or - 200 psf at all points. Isolated interior column footings should be designed for contact stresses of about 150 psf less than the average used to balance the continuwalls. The criteria for balancing will depend somewhat the nature of the structure. Single-story, slab-on-grade strucmay be balanced on the basis of dead load only. story structures may be balanced on the basis of dead load plus one half live load, for up to three stories.

It is extremely important, due to the nature of data obtained by the random sampling of a nonhomogeneous material such as soil, that a shallow foundation system be

used only if all recommendations are strictly followed. All the listed recommendations regarding fill compaction, site grading, drainage and subsurface water control are exceedingly important. CAUTION: Failure to follow these recommendations will void part or all of the recommendations contained in this report.

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#### STRUCTURAL FILL

extensive layer of medium low Αn density native soils was encountered on this site. The soil are of extremely low density and may not be judged suitable for support of the proposed shallow foundation system. Owing to the depths to which this lower density soil may be encountered and relatively shallow excavation depths which may be anticipated, i t may be recommended an overexcavation/replacement scheme be used on this site.

The existing low density soils should be removed to a depth of 3 feet below the proposed bottom footing elevation. Once it is felt that adequate soil removal has been achieved, it is recommended that the excavation be closely examined by a representative of Lincoln-DeVore to ensure that an adequate overexcavation depth has indeed occurred and that the exposed soils are suitable to support the proposed structural man-made fill.

Once this examination has been completed, it is recommended that a coarse-grained, non-expansive, non-free draining man-made structural fill be imported to the site. This imported fill should be placed in the overexcavated portion of this site in lifts not to exceed 6 inches after compaction. A minimum of 90% of the soils maximum Modified Proctor dry density (ASTM D-1557) must be maintained during the soil placement. These soils should be placed at a moisture content conducive to the required compaction (usually Proctor optimum moisture content ± 2%). The granular material must be brought to the required density by mechanical means. No soaking, jetting or puddling tech-

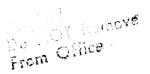
January Control

niques of any type should be used in placement of fill on this site. To ensure adequate lateral support, we must recommend that the zone of overexcavation extend at least 2 feet around the perimeter of the proposed footing. To confirm the quality of the compacted fill product, it is recommended that surface density tests be taken at maximum 2 foot vertical intervals.

The placement of a geotextile fabric for separation between the native soils and the structural fill is recommended to aid the fill placement and to improve the stability of the completed fill.

When The structural fill is completed, an allowable bearing capacity of 2200 psf maximum may be assumed for proportioning the footings.

If full basement type construction is anticipated for a given structure or if the loading conditions of a crawlspace or a half basement-type structure would require more bearing than the capacity than the metastables of Soil Type No. I and II can offer, then the high-density shales and siltstones of the Mancos Shale Formation may be may be utilized for foundation bearing. At this time Lincoln-DeVore has not been informed of the individual foundation/building plans and is therefore not informed as to the precise wall or column loading plan within any of the proposed buildings. Therefore, three foundation types which could be utilized for single-family residential construction are recommended based on our experience in this area. The choice between these foundation types depends on the internal loading of the foundation members and the amount of excavation



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planned to achieve the finished lower elevations.

The three foundation types preliminarily recommended are as follows:

- The voided wall on grade foundation system with a stemwall resting directly on the shale formation, or on a properly compacted structural fill.
- 2. The isolated pad and grade beam foundation system in which the grade beam is voided and loads are transferred to the isolated pads.
- 3. The drilled pier and fully voided grade beam system with the loads transferred to the piers.

Recommendations given in this report are given for the Shallow Foundation Types No. 1 and 2 with the Deep Foundation section addressing Type No.3.

#### DEEP FOUNDATIONS:

Under some loading conditions, or with excessive amounts of metastable soils beneath the proposed foundation, we recommend that a deep foundation system, consisting of either drilled piers or driven piles be used to carry the weight of the proposed structure. Deep foundations must extend through the low density, upper lean clay materials and into the underlying siltstone and clays of the Mancos Shale Formation. Both types of foundation have advantages and disadvantages with respect to this site. Therefore, the decision as to which system is used is largely economic and will be to the owner or his representative. Drilled pier and driven pile foundation systems will be discussed in this Recommendations regarding driven piles can be provide if desired.

#### DRILLED PIERS:

We recommend that drilled piers have a minimum shaft length of 12 feet and be embedded at least 5 feet into the relatively unweathered bedrock. At this level, these piers may be designed for a maximum end bearing capacity of 25000 psf, plus 1800 psf side support considering only the side wall area embedded in the bedrock. Due to the expansive potential of the bedrock, a minimum dead load uplift is required, consisting of a point uplift of 2000 psf and 290 psf side uplift, based on the side wall embedded in the bedrock. The overburden is soft and no supporting or uplift values are assigned to this material. The weight of the concrete in the pier may be incorporated into the required dead load.

It is recommended that the bottoms of all piers be thoroughly cleaned prior to the placement of concrete. The amount of reinforcing in each pier will depend on the magnitude and nature of loads involved. As a rule of thumb, reinforcing equal to approximately 1/2 of 1% of the gross cross-sectional concrete area should be used. Additional reinforcing should be used if structural conditions warrant. We recommend that reinforcing extend through the full length of pier.

To minimize the possibility of voids developing in the drilled piers, concrete with a slump of 5 to 6 inches is recommended. We recommend that piers be dewatered and thoroughly cleaned of all loose material prior to placing the steel cage and concrete. The pier excavation should contain no more than 2 inches of free water unless the concrete is placed by means of a tremie extending to the bottom of the pier. A free

fall in excess of 5 feet is not recommended when placing concrete in drilled piers. We recommend that casing be pulled as the concrete is being placed and that a 5 foot head of concrete be maintained while pulling the casing. It is recommended that drilled piers be plumb with 2% of their length and that the shaft maintain a constant diameter for the full length of the pier and not allowed to "mushroom" at the top.

#### DRILLED PIER OBSERVATION:

The foundation installation for drilled piers should be continuously observed by a representative of Lincoln DeVore to determine that the recommended bearing material has been adequately penetrated and that soil conditions are as anticipated by the exploration. This observation will aid in attaining an adequate foundation system. In addition, abnormalities in the subsurface conditions encountered during foundation installation can be identified and corrective measures taken as required. Lincoln DeVore requires a minimum of one working day's notice, and a copy of the foundation plan, to schedule any field observation.

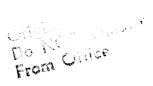
#### **GRADE BEAMS:**

A reinforced concrete grade beam is recommended to carry the exterior wall loads in conjunction with the deep foundation system. If the expansive Mancos Shale Formation is within five feet of the bottom of the grade beam, we recommend that this grade beam be designed to span from bearing point to bearing point and not be allowed to rest on the ground surface between these points. We recommend a void space be left

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between the bottom of the grade beam and the subgrade below due to the expansive nature of the subgrade soils.

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## CONCRETE SLABS ON GRADE

Slabs could be placed directly on the natural soils assuming that these soils do not exhibit significant metastable characteristics, or on a structural fill. We recommend that all slabs on grade be constructed to act independently of the other structural portions of the building. One method of allowing the slabs to float freely is to use expansion material at the slab-structure interface.

constructed over a capillary break of approximately 6 inches in thickness. We recommend that the material used to form the capillary break be free draining, granular material and not contain significant fines. A free draining outlet is also recommended for this break so that it will not trap water beneath the slab. A vapor barrier is recommended beneath the floor slab and above the capillary break. To prevent difficulty in finishing concrete, a 2 inch sand layer should be placed above the break. An alternate method of reducing finishing problems would be to place the vapor barrier beneath approximately 6 inches of a minus 3/4 inch gravel fill. This method must be very carefully accomplished to minimize excessive puncturing and tearing of the vapor barrier.

If the slabs are to be placed on soils with significant metastable properties or expansive clays of the Mancos Shale Formation, slab movement must be expected. Mitigation techniques for metastable and expansive soils are very similar in that soil moisture must be strictly controlled and slab movement must be anticipated. It is recommended that floor slabs on grade be constructed with control joints placed to

divide the floor into sections not exceeding 360 square feet, maximum. Also, additional control joints are recommended at all inside corners and at all columns to control cracking in these areas.

The first alternative is to dispense with slab-on-grade construction and use a structural floor system. A structural floor system may be either a structural reinforced concrete slab or a structural wood floor system suspended with floor joists. Each system would utilize a crawl space. This alternative would substantially reduce a potential for post construction slab difficulties due to the expansive properties of the underlying Mancos Shale or soil collapse due to the alluvial metastable alluvial soils.

The second alternative is to install a three foot "buffer zone" of non-expansive, granular soil beneath the slab. This would mitigate the potential for slab movement; however, some potential for movement still exists. Should this alternative be selected, we would recommend that the following be performed:

- Non-expansive granular soils should be selected for the "buffer zone". The granular soils should contain less than 20% of the material, by dry weight, passing the U.S. No. 200 Sieve. We recommend that the geotechnical engineer be contacted to examine the soils when they are selected, to substantiate that they comply with the recommendations.
- 2. The perimeter drain for the structures should be located at the elevation equal to or deeper than the "buffer zone". This is to reduce the potential for a "bathtub" effect" which may cause the slab to heave. The "bathtub effect" is created when water is allowed to seep into the "buffer zone" and then becomes trapped since the underlying clay soils have a much lower permeability rate than the "buffer zone" material.

Therefore, water may accumulate in the "buffer zone" and subsequently wet the clay soils and cause them to expand.

- 3. For slabs placed near the expansive clays of the Mancos Shale Formation, all the non-bearing partitions which will be located on the slabs should be constructed with a minimum 2 inches of void space at the bottom of the wall. This space would allow for the future upward movement of the floor slabs and minimize damage to walls and roof sections above the slabs.
- 4. We recommend that all slabs being placed on the "buffer zone" be constructed to act independently of the other structural portions of the building. One method of allowing the slabs to float freely is to use expansion material at the slab-structure interface. Control joints should be placed 20 feet on center in each direction. These control joints should control the crack ing of the slab should the underlying soils come in contact with water.

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#### EARTH RETAINING STRUCTURES

Assuming the upper alluvial soils (Soil Types I and II) are utilized for backfill purposes, the active soil pressure for the design of earth retaining structures may be based on an equivalent fluid pressure of 42 pounds per cubic fcot. The active pressure should be used for retaining structures which are free to move at the top (unrestrained walls). For earth retaining structures which are fixed at the top, such as basement walls, an equivalent fluid pressure of 53 pounds per cubic foot may be used. It should be noted that the above values should be modified to take into account any surcharge loads, sloping backfill or other externally applied forces. The above equivalent fluid pressures should also be modified for the effect of free water, if any.

The passive pressure for resistance to lateral movement may be considered to be 318 pcf per foot of depth. The coefficient of friction for concrete to soil may be assumed to be 0.35 for resistance to lateral movement. When combining frictional and passive resistance, the latter must be reduced by approximately 1/3.

#### REACTIVE SOILS

Since groundwater in the Grand Junction area typically contains sulfates in quantities detrimental to a Type I cement, a Type II or Type I-II or Type II-V cement is recommended for all concrete which is in contact with the subsurface soils and bedrock. Calcium chloride should not be added to a Type II, Type I-II or Type II-V cement under any circumstances.

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#### **PAVEMENTS**

Samples of the surficial native soils at this property that may be required to support pavements have been evaluated using the Hveem-Carmany method to determine their support characteristics. The results of the laboratory testing are as follows:

R = 48
Expansion @ 300 psi = 0.23
Displacement @ 300 psi = 2.84

No estimates of traffic volumes have been provided to Lincoln DeVore. However, we assume that the roads will be classified as residential. The design procedures utilized are those recognized by the Colorado Department of Highways. An 18 kip ESAL of 5, also recommended by the Highway Department, was used for the analysis.

#### Main Drive Areas:

#### 20-Year Design Life

3 inches of asphaltic concrete pavement on 6 inches of aggregate base course on 12 inches of recompacted subgrade soils

# Full-Depth Asphalt

4 inches of asphaltic concrete pavement on 12 inches of recompacted subgrade soils

## Rigid Concrete Pavement - 20-Year Design Life

6 inches of rigid concrete pavement on 12 inches of recompacted subgrade soils

We recommend that the asphaltic concrete pavement have a minimum  $R_{\mathsf{t}}$  value of 95, and meet the State of Colorado requirements for a Grade C mix. In addition, the asphaltic concrete pavement should be compacted to a minimum of

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95% of its maximum Hveem density. The aggregate base course should meet the requirements of State of Colorado Class 6 material, and have a minimum R value of 78. We recommend that The base course be compacted to a minimum of 95% of its maximum Standard Proctor dry density (ASTM D-698), AASHTO T-99, at a moisture content within + or -2% of optimum moisture. The native subgrade shall be scarified and recompacted to a minimum of 90% of their maximum Modified Proctor day density (ASTM D-1557) at a moisture content within + or -2% of optimum moisture.

#### LIMITATIONS

report is issued with the understanding that it is the responsibility of the owner, or representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project, and are incorporated into the plans. In addition, it is his responsibility that the necessary steps are taken to see that the contractor and his contractors carry out these recommendations during construction. The findings of this report are valid as of the present However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in acceptable or appropriate standards may occur or result from legislation or the broadening of engineering knowl-Accordingly, the findings of this report may be invalid, wholly or partially, by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of 3 years.

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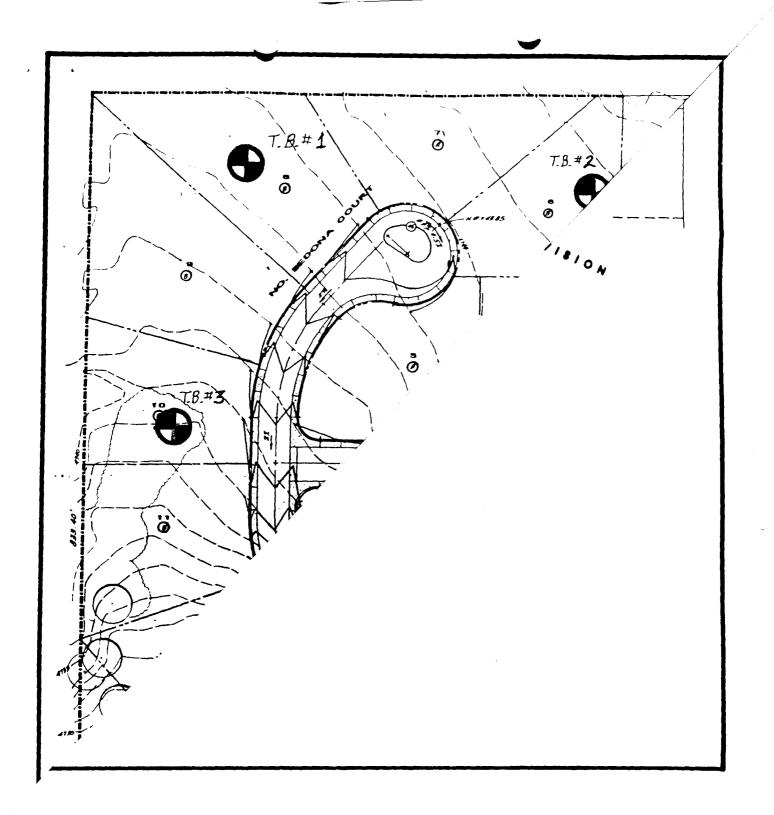
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pertain only to the site investigated and are based on the assumption that the soil conditions do not deviate from those described in this report. If any variations or undesirable conditions are encountered during construction or the proposed construction will differ from that planned on the day of this report. Lincoln DeVore should be notified so that supplemental recommendations can be provided, if appropriate.

Lincoln DeVore makes no warranty, either expressed or implied, as to the findings, recommendations, specifications or professional advice, except that they were prepared in accordance with generally accepted professional engineering practice in the field of geotechnical engineering.

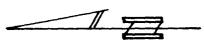
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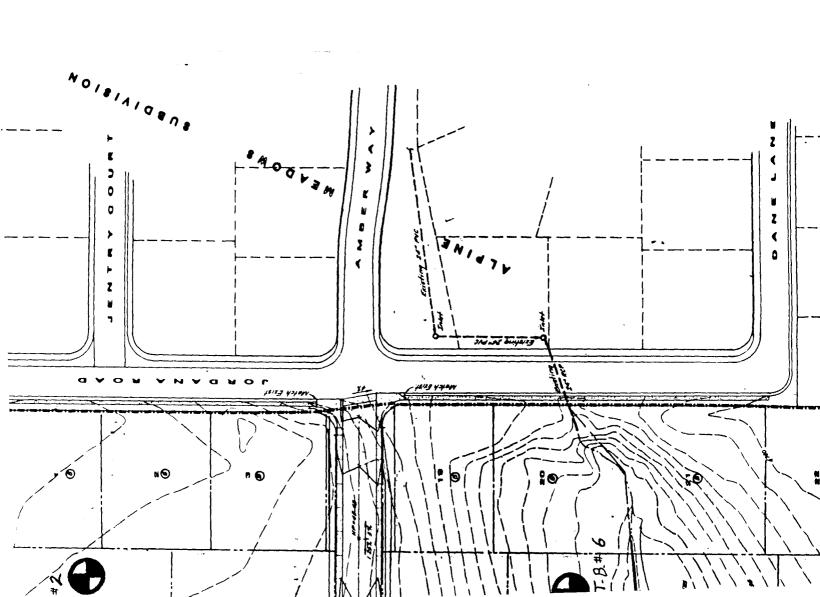


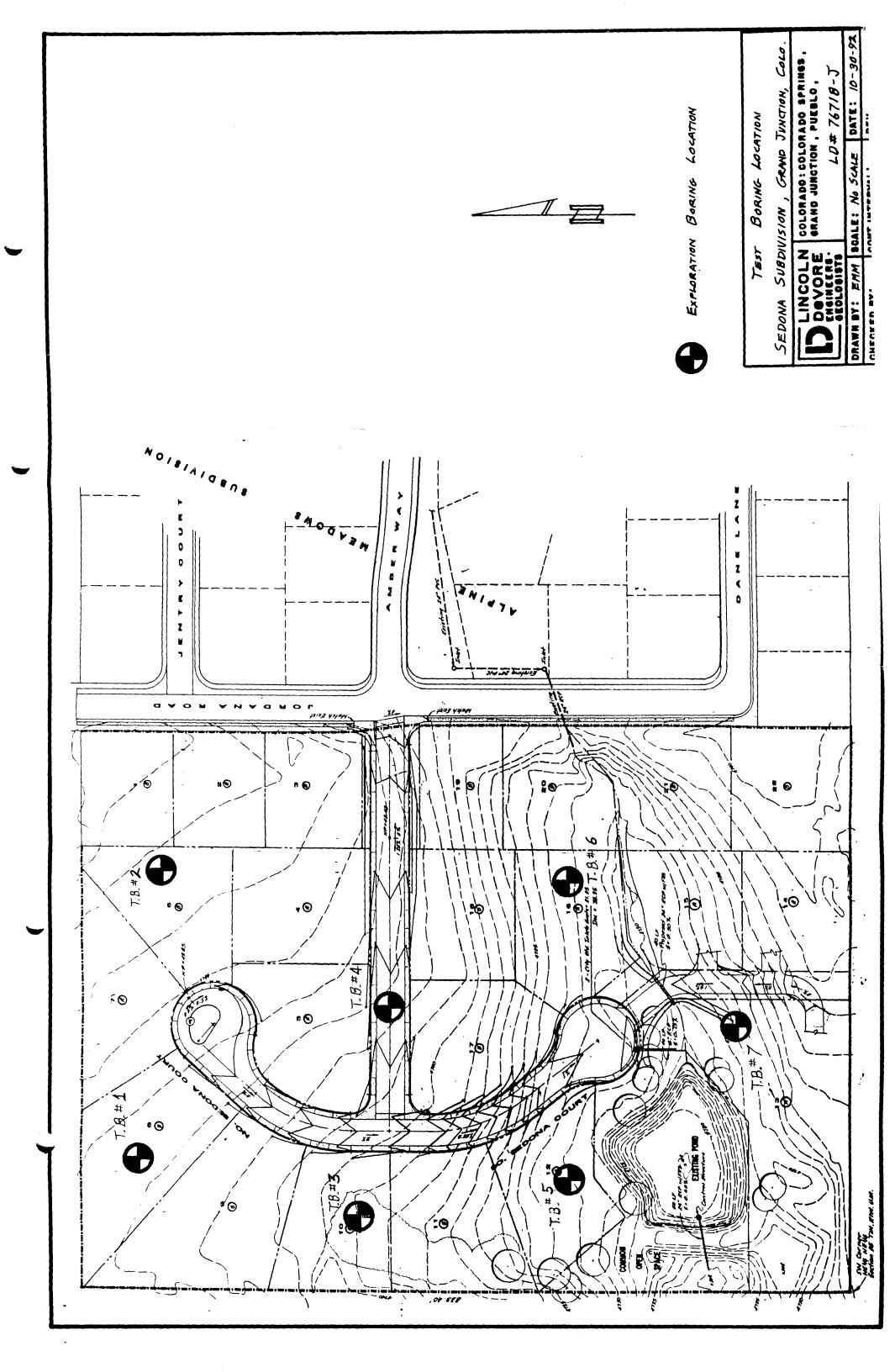
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EXPLORATION BORING LOCATION

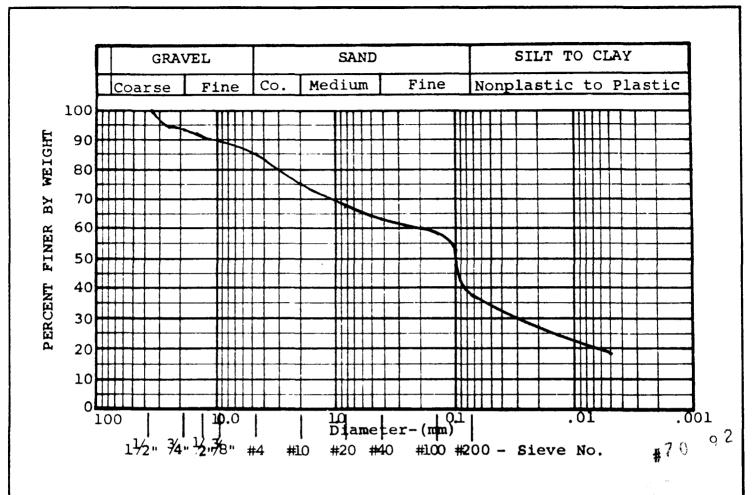




BORING NO.  SAMPLE SAMPLE DESCRIPTION:	5		PENETRATION RESISTANCE	N-SITU DENSITY (PCF)	MOISTURE CONTENT[%]
SYMBOL SAMPLE SAMPLE DESCRIPTION	ON		PEN	IN-SITU DENSIT	0 ¥0 <b>№</b>
Silty Clay and 5. harge Amounts of 2	and Silt	۔ س			
Silt Sandy 5/-	bultates moist	νε -	14,		3-6%
MANCOS SHALE MOIST SITTSTONE	and Shale	-	11		
Moist - Shale and Sitts	rored	SPT	45/12		14-3%
		- 1		1	
INCREASING DENSIT	Υ	8 PT_	22/6 92/		14-1%
DECREASING MOISTUR	LE	]	/12		
20		BULK-			11-72
NO FREE WATER IN	BORING	=			
1 7 15	1-5-92				
	¥70 92				
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		-			
	LOG OF SUB	SURFAC	EEXF	LORAT	
	SEDONA SUB-				
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Lincoln DeVore, Inc. Geotechnical Consultants	JOB NO. 76718-J	DRAWI EH	M		

BORING NO. 6  ELEVATION:  DESCRIPTION  SULTY SAND Thin clayey strata  Very Compressible Silt strata  Sultates low 4 medium density strate  MANCOS SHALE  SHALE 4 SILTSTONE STRATA  Expansive - Moist  Fractured, very firm  10  BORING NO. 6  ILLIAN  BORING NO. 6  ILLI
SILTY SAND Thin clayey STRATA  SILTY SAND Thin clayey STRATA  SUPERING Compressible Silt STRATA  MANCOS SHALE  SHALE 4 SILTSTONE STRATA  Expansive - Moist.  15 - 60/6 12 94
SHALE & SILTSTONE STRATA  Expansive - Moist 15 - 60/6 12 94
Expansive - Moist 15 1/6 12 ga
10 - Fractured, very firm
#70 92 ]
LOG OF SUBSURFACE EXPLORATION
SEDONA SUB- GRAND TUNCTION, COLO
DATE 18~30~
Lincoln DeVore, Inc. Geotechnical Consultants  JOB NO. 76718-J  EMM

BORING NO. 7  SAMBOL SAMPLE SAMPLE SAMPLE DESCRIPTION	PENETRATION RESISTANCE	IN-SITU DENSITY (PCF)	MOISTURE CONTENT[%]
			20
VERY STRATIFIES  SILT, SANDY SILT  Very Moist  Clayey Sitt & Sitty Sand SPT  Compressible  Increasing Moisture  Sulfates	9/6 9/12		16-28
BULK SHALE and SILTSTONE		( )	22-7%
MANCOS SAALE EXPANSIVE BULK			13-7%
Dense - Moist Very Silry			13-170
Sulfates			
15-			
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]   [ ]			
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LOG OF SUBSURFAC	E EXP	LORATI	ON:
SEDONA SUB. GAAND			
		DAT	E
Lincoln DeVore, Inc.  Geotechnical Consultants  JOB NO. 76718-J	<b>J</b>	<del>                                     </del>	0-30-92
Geotechnical Consultants 76718 - J	HH		



Soil	Sample	_5P/	/5M	 

Sample	Location	_T.H.#	= 10	8'

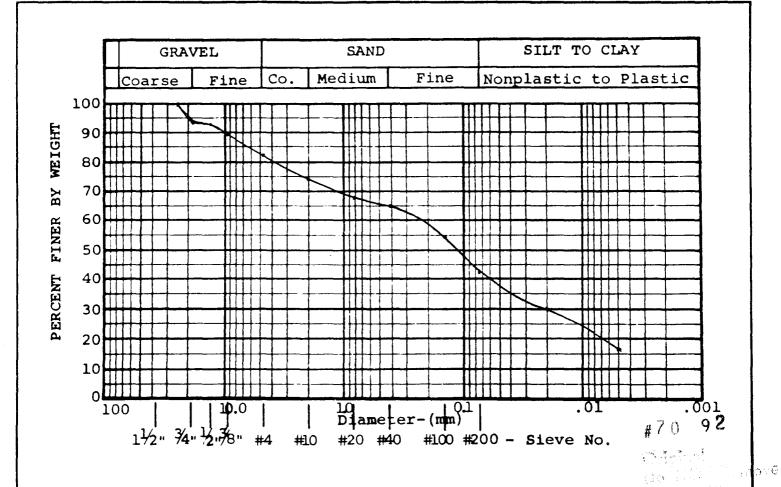
Sample No
Specific Gravity
Moisture Content 14-7%
Effective Size
Cu
Cc
Fineness Modulus
L.L. <u>20.2</u> % P.I. <u>3-3</u> %
Bearingpsf
Sulfatesppm

ba.pre bookeron	
Sieve Size	% Passing
1-1/2"	100
1"	94-4
3/4"	93-0
1/2"	90-6
3/8"	89-4
#4	84-9
#10	74-9
#20	67-2
#40	63-3
#100	58-0
#200	37-2
0.0200	26-6
0.0050	18-7



SEDONA SUBDIVISION - GRAND JUNCTION, CO

JOB NO. DRAWN
767/8-J EHH



Sample No W/ GRAVELS
Specific Gravity
Moisture Content
Effective Size
Cu
Cc

Soil Sample 5P/SM - WITH ROCK FRAG.

L.L. <u>22-6</u> %	P.I. <u>Z.6</u> %
Bearing	<b> 400</b> psf
Sulfates	2000 + ppm

Sample Location	Sample	Location	T-H-#2	@8'	files in
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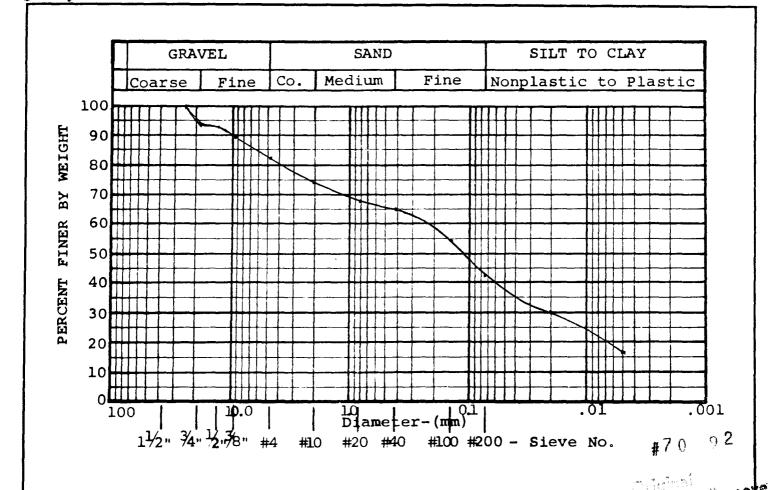
Sieve Size	% Passing
1-1/2"	
1"	100
3/4"	02.5
1/2"	976
	88-8
#4	<b>A</b> .
#10	73.9
#20	68-3
#40	65-3
#100	
#200	,
0.0200	
0.0050	



Fineness Modulus \_\_\_\_

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		DATE 10-8-92
NO. 76718-J	DRAWN EMM	
	<b>NO.</b> 76718-J	NO. DRAWN



Soil Sample _ 5P/5M - WITH ROCK FRAG.	Sample Location <u>T.H-#2@8</u>
Sample No W/ GRAVELS	Sieve Size % Passing 1-1/2"
Specific Gravity	1"
Moisture Content	3/4"
	1/2"976
Effective Size	3/8"
Cu	#482-/
Cc	#10
	#20 <u>68-3</u>
Fineness Modulus	#4065-3
L.L. <u>22-6</u> % P.I. <u>2-6</u> %	#100 <i>54-1</i>
Bearing	#200 <u>42-0</u>
Sulfatesppm	0.0200
Surracesppm	0.0050
	SEDONA SUBDIVISION - GRAND JUNCTION, G
	DATE 10-8-92
Lincoln DeVore, Inc. Geotechnical Consultants	JOB NO. 76718-J DRAWN EMM

SUMMAR	RY SHEET
Soil Sample SANDY SILT (ML)	Test No. 78718-J
Location SEDONA SUBDIVISION  Boring No. 3 Depth 8'  Sample No. II	Date 10-13-92  Test by TLS
Natural Water Content (w) <u>22-1</u> % Specific Gravity (Gs)	In Tlace Density (To) 104-8 pcf
SIEVE ANALYSIS:	
Sieve No. % Passing  1 1/2"  1"  3/4"  1/2"  98-2  4  92-7  10  88-5  20  86-2  40  84-6	Plastic Limit P.L. 29-0 % Liquid Limit L. L. 39-1 % Plasticity Index P.I. 10-1 % Shrinkage Limit
100	Optimum Moisture Content - we%  Maximum Dry Density -7dpcf  California Bearing Ratio (av)%  Swell:Days%  Swell againstpsf Wo gain%
Grain size (mm) %	BEARING:
.02 67.4	Housel Penetrometer (av) 1100 psf Unconfined Compression (qu) psf Plate Bearing: psf Inches Settlement Consolidation 2.3% under 921 psf 5.4% under 2042 psf
	PERMEABILITY:
	K (at 20°C) Void Ratio
	Sulfates 1000 ppm. 270 -2
soil analysis	LINCOLN-DeVORE TESTING LABORATORY COLORADO SPRINGS, COLORADO

SUMMARY	Y SHFET
Soil Sample ML - Sitt - MANCOS SHALE FORM	Test No. 767/8-J
Location SEDONA SUB.	Date 10-8-92
Location SEDONA SUB.  Boring No. 1 Depth /3  Sample No. 11	Test by
Sample No.	lest by
Natural Water Content (w) <u>18-2</u> % Specific Gravity (Gs)	In Place Density ( <b>7</b> 0)pcf
SIEVE ANALYSIS:	
Sieve No. % Passing	Plastic Limit P.L. 30-7 %
·	Liquid Limit L. L. 40.8 %
1 1/2"	Plasticity Index P.I%
] II	Shrinkage Limit%
3/4 <u>"</u> 1/2" 100 4 98.7	Flow Index
4 98.7	Volumetric Change%
109 <i>4.0</i>	Lineal Shrinkage%
20 <u>9</u> 2-0	
100	MOISTURE DENSITY: ASTM METHOD
200	~ · · · · · · · · · · · · · · · · · · ·
	Optimum Moisture Content - we%
	Maximum Dry Density = rapoi California Regring Ratio (av) %
·	Maximum Dry Density -7d pcf California Bearing Ratio (av) % Swell: Days 5.5 %
	Swell against 1690 psf Wo gain 7.1 %
HYDROMETER ANALYSIS:	
Grain size (mm) %	
	BEARING:
-02 70-8	Harris Bonatan and 4600 per
- 005 53-5	Housel Penetrometer (av) 4600 psf Unconfined Compression (qu) psf
	Plate Bearing:psf
	Inches Settlement
	Consolidation % under psf
	PERMEABILITY:
	K (at 20°C)
	Void Ratio
	2
	Sulfates 2000+ ppm.
	# 1 The second of the second o
	Lucia,
SOIL ANALYSIS	LINCOLN-DeVORE TESTING LABORATORY
201F VIAVE 1212	COLORADO SPRINGS, COLORADO

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BORING NO.  ELEVATION:  DESCRIPTION	1		PENETRATION RESISTANCE	N-SITU DENSITY (PCF)	MOISTURE CONTENT [4.]
SYMBOL SAMPLE SAMPLE DESCRIBLIO	ON		PENE	IN-SITU DENSIT	MOIS
Poorly graded  Silty Sand with Silty Cl  Decreasing Densi  Medium Density - So  Coarse Silty Sand with  Compressible Strate  Very Weathered MANCOS  Very Silty - with Sand Silty  Firm Expansive  WEATHERED MANCOS SHALL  10  No Free Water	me soft strata Silty Clays  R SHALE TTUTA Salfetes	SPT		12	14-2% 14-7% 18-28
	Photy Post.	-			
LOG OF SUBSURFACE EXPLORATION					
SEDONA SUB. GRAND JUNCTION COLO					*****
	SPUNA JUB.	- 101/10	JUN		TE
Lincoln DeVore, Inc.	JOB NO.	DRAW	N.	_	10-30-92
Geotechnical Consultants	76718-J		SHH		

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SYMBOL SYMBOL SYMBOL SYMBOL SYMBOL DESCRIPTION:		PENETRATION RESISTANCE	IN-SITU DENSITY (PCF)	MOISTURE CONTENT [%]	
Sandy Clays  Deretified  Silty Sand  Shale and Sandstone  VERY STRATIFIES - I  Mediam Density  Top 4' May BE DEBR  Consisting OF SHA  Expansive Very Sil  Decreasing Moistre  Increasing Density  No Free Water	bris Flow Deposit  Slightly Moist  S.T.  Debris  NUREASING: HOISTURE  Y  IS FLOW DEPOSIT  S.T.  ALE FRAGMENTS  KOS Shale  C.S.  Ty Cky  Live Wy Depth	15/2 35/2 10/3 39/2 13/18	113.5	6-0% 13-4% 19-1%	
	LOG OF SUBSURFA				
	SEDONA SUB- GRAND	JUNCT			
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Lincoln DeVore, Inc. Geotechnical Consultants	JOB NO. DRAW	NEHH			

BORING NO.  ELEVATION:  DESCRIPTION	3		PENETRATION RESISTANCE	N-SITU DENSITY (PCF)	MOISTURE CONTENT[%]
SAMBOL SA	ON		PENE	IN-SITU DENSIT	MOIS
Compressible Silt a  Stratified  SILT - Low Plastic  Medium Density  Silty Clay strata	moist	57		119-7	10-5%
SANDY SILT LOW F MANCOS SHALE - WEA	thered	57		104-8	22-1%
Sulfares Frac Expansive - Sity Sitrstone Strata Increasing Density Moist	y Clay With	- - - - - -	26, 11, 12		14-1%
Expansive		5PT ] -	3% 93 <sub>/1</sub> 2		13-4%
No Free Water	-	-			
	#70 92  Do No. Thee				
7					
	LOG OF SUB				
	SEDONA SUB.	GRAND	, JUN	DAT	Ē
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LAND DEVELOPMENT CONSULTANT

November 9, 1992

David Thorton Community Development Dept. City of Grand Junction 250 North 5th. Street Grand Junction, CO 81501

RE: SEDONA SUBDIVISION

Dear Mr. Thorton:

In response to your initial review of the Preliminary Plan Application for Sedona Subdivision, the following is provided:

- 1. Two copies of the existing subdivision plat are attached. This should serve as the boundary survey required by the Code.
- 2. Article II of the submitted C.C. and R's contains language pertinent to the ownership of the Common Areas.
- 3. Ute Water has indicated that they do not want a water line stub to the west for future extension towards Seventh Street. Ute will not accept any water main into their system which is located within an easement.
- 4. The Army Corps. of Engineers will determine if the requirement for a 404 Permit will apply to the application during their Preliminary Plan review process. The Development Code does not indicate that a response from the Corps. is required as part of the initial Preliminary Plan application process.

Respectfully.

Thomas A. Logue

RECEIVED GRAND JUNCTION PLANNING DEPARTMENT

NOV 9 1992

## **REVIEW COMMENTS**

Page 1 of 4 + Attachments

FILE NO. #70-92

TITLE HEADING: Sedona Subdivision

ACTIVITY: Preliminary Plan for a Planned Subdivision, Single Family Residential,

4.2 units per acre

LOCATION: Southwest corner of 12th Street & H Road, west of Alpine Meadows

**PETITIONER:** 

Sedona Partnership

PETITIONER'S ADDRESS/TELEPHONE:

P.O. Box 248

Grand Junction, CO 81502

(303) 242-6414(W)

ENGINEER/REPRESENTATIVE: Thomas A. Logue

STAFF REPRESENTATIVE: Dave Thornton

NOTE: WRITTEN RESPONSE BY THE PETITIONER TO THE REVIEW COMMENTS

IS REQUIRED ON OR BEFORE 5:00 P.M., November 24, 1992

**CITY AGENCIES:** 

CITY FIRE DEPARTMENT

11/17/92

George Bennett

244-1400

A minimum of an eight inch (8") supply line is required and looped to provide the minimium required flows. Fire hydrants are required at all intersections and spaced a maximum of five hundred feet (500') apart.

**CITY PARKS & RECREATION** 

11/17/92

Don Hobbs

244-1542

Open Space fee based upon 22 units @ \$225, unit = \$4,950, due.

POLICE DEPARTMENT

11/17/92

Marty Currie

244-3563

No problems noted.

File #70-92 Page 2 of 4

**DEVELOPMENT ENGINEER** 

11/17/92

Gerald Williams

244-1590

See attached redlined plans and reports.

CITY UTILITIES ENGINEER

11/17/92

Bill Cheney

244-1590

Water - Water supplied by Ute Water. Show pressure at hydrant since line is dead ended at subdivision and does not loop to another supply line. Maximum spacing on hydrants is 250'. Locate hydrant on South Sedona Court nearer to Amber Way.

Sewer - Provide detail for relocating lift station and detail for removing existing wet well. Provide calculations on pump capacity and head to insure lift station has adequate pumping capacity. No other comments at this time.

COMMUNITY DEVELOPMENT DEPARTMENT

11/17/92

**Dave Thornton** 

244-1437

See attached.

# **COUNTY & STATE AGENCIES:**

MESA COUNTY PLANNING

DATE 11/17/92

Linda Dannenberger

244-1771

The proposed density is acceptable. Some design considerations:

Lot 13's frontage requirements on S. Sedona Court should be waived to enlarge the common area to include the area north of and inlcuding the easement across Lot 13. There is not enough room for access or maintenance around the pond.

Lot 22 should have more frontage on Jordana.

South Sedona Court could be lengthened to allow common driveway access for Lots 13 & 14 only.

Common area should be fenced on west boundary to protect adjacent property owners from trespass.

Some level of improvement to Jordana Road should be required to provide an outlet to H Road for the additional traffic.

The setbacks are minimal and would allow overbuilding of lots.

File #70-92 Page 3 of 4

# **OTHER REVIEW AGENCIES:**

GRAND VALLEY RURAL POWER 11/17/92
Perry Rupp 242-0040

GVRP would need 10' easements along the south of Lot 15 and the north of Lot 22.

Note: Project Narrative states gas, electric, and communication will be in "common trench", is not true. Electric & communication "common trench" (without gas).

PUBLIC SERVICE COMPANY 11/17/92 Dale Clawson 244-2695

Electric: Grand Valley Rural Power lines service area. DC

Gas: No objections. 11/5/92 MR

U.S. WEST 11/17/92 <u>Leon Peach 244-4964</u>

There will be a need to place telephone cable from 12th Street to this development hence an easement location and routing can be negotiated.

# COMMUNITY DEVELOPMENT DEPARTMENT STAFF REPORT

STAFF REVIEW - Dave Thornton SEDONA SUBDIVISION

# **Review Comments:**

- 1. All recommendations in soils report must be adhered to for all construction.
- 2. South Sedona court must be extended to the south to provide direct access to all lots including lots 13 & 14. In addition, ROW must be didicated to the south to provide access to the adjacent property to provide for a better traffic circulation for the entire area.
  - 3. Will Common Areas be maintained by Homeowners Association?
- 4. Who will be the initial Architectural Review Committee and will they stamp the plans or issue a letter of approval prior to a homebuilder requesting a Planning Clearance?
- 5. The parcel directly to the west is landlocked and access must be provide to that lot. Extending Amber Way to the parcel would probably be the best way to handle this. We will support the option of only requiring dedication of right-of-way and not requiring improvements to this additional ROW of Amber Way. Future development on the parcel currently landlocked would be required to construct the street improvements and tie into the intersection of Amber Way and Sedona Court.
- 6. The water line must be looped to provide adequate fire flows. This can be done by extending the water line in Jordanna to H Road.

#### COMMUNITY DEVELOPMENT DEPARTMENT STAFF REPORT

**STAFF REVIEW** - Dave Thornton

FILE # 70-92

DATE: November 25, 1992

**REQUEST:** Preliminary Plan approval for 22 single family units on 11.6 acres to be know as the "Sedona Subdivision".

**LOCATION:** The Sedona Subdivision site is currently known as Lots 1 nd 2 of La Casa de Dominquez, Filing No. 3. It is locate 500 feet south of H Road and 850 feet west of 27 Road. Access to the site is from 27 Road through the Alpine Meadows Subdivision via Amber Way.

**APPLICANTS:** Sedona Partnership (William Shuman) & Thomas E. Benson REPRESENTATIVE: Tom Logue

**EXISTING LAND USE:** One Single Family residence on Lot 2 of La Casa de Dominquez.

**PROPOSED LAND USE:** The proposal calls for the ultimate development of 22 single family building sites on 11.6 acres. Lots will range from 12,500 sq ft to 35,000 sq ft.

#### **SURROUNDING LAND USE:**

NORTH -- Vacant

**EAST** -- Single Family residential - Alpine Meadows Subdivision (44 lots)

**SOUTH** -- Agricultural with 1 single family residential

**WEST** -- Agricultural with 1 single family residential

**EXISTING ZONING:** Planned Residential with a maximum of 4.2 unit per acre.

**PROPOSED ZONING:** No Change

#### **SURROUNDING ZONING:**

NORTH -- County Zoning of Planned Residential approx 4 units per acre

**EAST** -- Planned Residential with a maximum of 4.2 units per acre.

**SOUTH --** County Zoning of Agricultural/Forestry/Transitional (AFT)

**WEST** -- County Zoning of Agricultural/Forestry/Transitional (AFT)

# RELATIONSHIP TO COMPREHENSIVE PLAN/POLICIES/GUIDELINES:

No Masterplan currently exists for this area. This area was annexed into the City effective 2/23/92 with the existing platting occurring in the County.

#### **STAFF ANALYSIS:**

Major issues that have emerged from the review of this project by all of the review agencies that have commented are the following:

- 1. In order to provide adequate fire flow as per code, the 8 inch water line must be looped. A deadend water line for fire flow purposes can only be a maximum of 1000 feet, therefore the developer will need to loop the existing deadend water line in the Alpine Meadows subdivision, then extend a new 8 inch line from that new loop to the proposed Sedona subdivision to provide water service. To extend the existing deadend line in Jordanna can be accomplished by constructing the line north in the dedicated County ROW to H Road through La Casa De Dominquez subdivision filing 2.
  - 2. Review comments have been adequately addressed except the following:
  - (a.) We are requiring the petitioner to extend the water line to H Road to provide a looped system. The petitioner's contention is that the looping of the utility lines is guaranteed through the approval of Casa De Dominquez filing two. That subdivision was approved by the County Commissioners and states that before any building construction can occur on any of the 6 lots in filing 2 the water line must be installed from San Gabriel Court to H Road.
- 3. The petitioner has provided ROW to the west via Amber Way because the parcel to the west is currently landlocked. Since that portion of this ROW which begins at the intersection of Sedona Courts is not needed for this development but is only being provided for the future access and development of the parcel to the west, we are not requiring the petitioner to built the street section. When the parcel to the west is developed they would be required to build it.
- In the initial review agency review the Community Development Department requested that South Sedona Court be extended to the South to provide direct access to lots 13, 14 and 15 and provide ROW access to the adjacent property to the south. The petitioner worked out a compromise where they are now providing a tract of land (tract A) to be designated for private ownership as a private drive and utility easement. ROW will not extend to the property to the south. They have also provided a turn around area for city vehicle servicing those lots. City staff accepts this compromise.

### STAFF RECOMMENDATIONS:

Staff recommends approval of the preliminary plan with the following conditions:

- (a.) The petitioner be required to extend the water line to H Rd to provide a looped system for fire flow.
  - (b.) That all review agency comments be adhered to except
  - 1.) Community Development Department's request that South Sedona Court be extended to the South and ROW provided to the adjacent parcel on the south.

  - The City is not requiring the petitioner to construct road improvements on Jordanna to H Road as County Planning suggests.

    2) County Planning's Suggestions that road improvements be required an Jordanna to H Road.

#### RESPONSE TO REVIEW AGENCY COMMENTS

TITLE: PRELIMINARY PLAN FOR SEDONA SUBDIVISION

FILE NO.: 70-92

LOCATION: Southwest corner of 12th. Street and H Road, west of Alpine Meadows.

**AGENCY** 

RESPONSE

Fire Department

See response to Development Emgineer.

Parks & Recreation

Open Space fees will be paid prior to the recording of the final plat.

Police Department

No response required.

Development Engineer

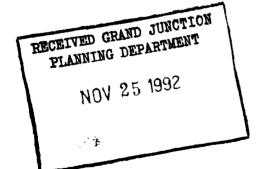
The following revisions have been made to the Preliminary Plans:

- 1. Tract A has been designated for private ownership as a private drive and utility easement for Lots 13,14 and 15.
- 2. A 42 foot undeveloped road right-of-way has been designated for future extension to the west between Lots 10 and 11.
- 3. An eight inch water main stub has been added to the utility plan at the new right-of-way dedication.
- 4. The Grading Plan has been revised to reflect the drainage swale along the west subdivision boundary.

The following will be included as part of the final plat submittal process of additional review:

- 1. The Drainage Report will be modified as requested.
- 2. The C.C.&R's will be modified as requested to include suggested language in reference to maintenance of the Open Space and Private Drive.
- 3. Suggested unit price changes within the Subdivision Improvements Agreement will be revised within the final agreement.

The Preliminary Utility Plan has not been revised to include the construction of an eight



inch water main between the north end of Jordana Road and H Road. This improvement was guaranteed by others. A copy of this guarantee is attached and identified as Exhibit A.

Utilities Engineer

According to the Fire Department, "maximum spacing for fire hydrants is 500 feet". According to Ute Water personal, water pressure at the fire hydrant at Amber Way and Jordana Road is approximately 85 psi.

According to the design engineer for the Alpine Meadows Subdivision, the lift station was originally designed to incorporate the potential for future additional residential units the area. A copy of this analysis was transmitted to the Public Works Department during the design phase of Alpine Meadows. Additional detailed pumping dated will be submitted with the Final Plans. During the lift station relocation process, the wet well will be pumped on an as needed bases. Sewage pumped from the wet well will be delivered to the Persigo Treatment Plant. The proposal calls for the modification of the wet well in order that it will ultimately serve as a gravity flow manhole.

Community Dev. Dept.

All identified Common Areas will be maintained as provided within the C.C. & R's by the Home Owners Association.

The initial Architectural Review Committee will consist of those individuals who are identified as the partners within the submitted ownership document. At such tie as 60% of the lots are sold, owners of those lots will replace the partners of the original committee. The committee will issue a letter of approval which will accompany the Building Permit Application.

Right- of Way for Amber Way will be provided to the west property line. A guarantee for the construction of a water line loop to H Road is attached and identified as Exhibit A.

County Planning

Adequate Open Space will be dedicated around the pond area to insure sufficient space for proper maintenance.

Adequate frontage exists for Lot 22 which allows for the construction of a 20 foot driveway and utility extensions to the house which is currently under construction.

There is an existing wire fence on the west

boundary of the Common Open Space.

See Exhibit A.

Proposed setbacks are identical to those found in the Alpine Meadows Subdivision.

Grand Valley Power

Requested easements will be granted on the Final

Plat.

Public Service Co.

No response is required.

U.S. West

No response is required.

# **EXHIBIT A**

# BOOK 1659 PAGE 26;

RESOLUTION NO. MCM 87-79
Planning Department No. C36-87

# LA CASA DE DOMINGUEZ - FILING #2

WHEREAS, T. L. Benson sought to have approval of a revised official development plan and a preliminary/final plan and plat on the following described land situated in the County of Mesa, State of Colorado, to wit:

(see attached)

and

WHEREAS, the hearing before the Board of County Commissioners was held July 21, 1987,

NOW THEREFORE, THE BOARD OF COUNTY COMMISSIONERS OF THE COUNTY OF MESA FINDS AS FOLLOWS:

That the hearing before the Board was held after proper notice;

That the staff recommendation was contained in a staff report dated July 17, 1987.

That the Mesa County Planning Commission made recommendations at their public hearing held on July 16, 1987.

That Filing #2 met with relevant Mesa County Land Use Policies, specifically Policies #2 Drinking Water, #3 Fire Flow, #4 Fire Response Time, #6 Sewer Service, #8 Street Widths; and the Mesa County Land Development Code, specifically Sections 4.1.1 Drinking Water, 4.1.2 Minimum Fire Flow, 4.1.3 Fire Response Time Standards, 4.1.5 Sewage Treatment, 4.2 Design Standards, and 4.3 Site Planning Standards.

That the revised official development plan and preliminary/final plan and plat is in accordance with the health, safety and welfare of the residents of Mesa County.

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS IN THE COUNTY OF MESA, STATE OF COLORADO, that the Filing #2, La Casa de Dominguez, consisting of a revised official development plan and preliminary/final plan is approved subject to the following conditions:

- I. Grand Junction Utilities' comment that the sewer plans and inspections be recorded with them.
- no units are built which would require the use of the sewer lift station in Filing #1.
- 3. Mountain Bell requirements for a contract and up-front money prior to ordering or placing facilities.
- 4. Ute Water's requirement that a 6" water line at the intersection of Franciscan Boulevard and San Gabriel Court in Filing #1 be extended and connected at H Road. Ute Water policies and fees in effect at the time of service apply.

# BOOK 1659 PAGE 264

- 5. Grand Junction Rural Fire will be provided with plans before the project is started.
- 6. Grand Valley Water Users' 50 foot irrigation easement must be perpetually open for operation and maintenance by the Association. Delivery of water will be made to the historical "point of delivery" for this land, and its distribution beyond this point is the reponsibility of others.

Upkeep and maintenance is the responsibility of others. usually the Landowners.

7. A building permit hold for the improvement of Franciscan Boulevard and the installation of sewer shall be placed on all lots except lots one and two in Block One and lots one and two in Block Two, or unless the developer installs these improvements and they have been released by the County.

PASSED AND ADOPTED this \_\_Ath\_\_ day of \_\_\_August\_\_\_\_\_,

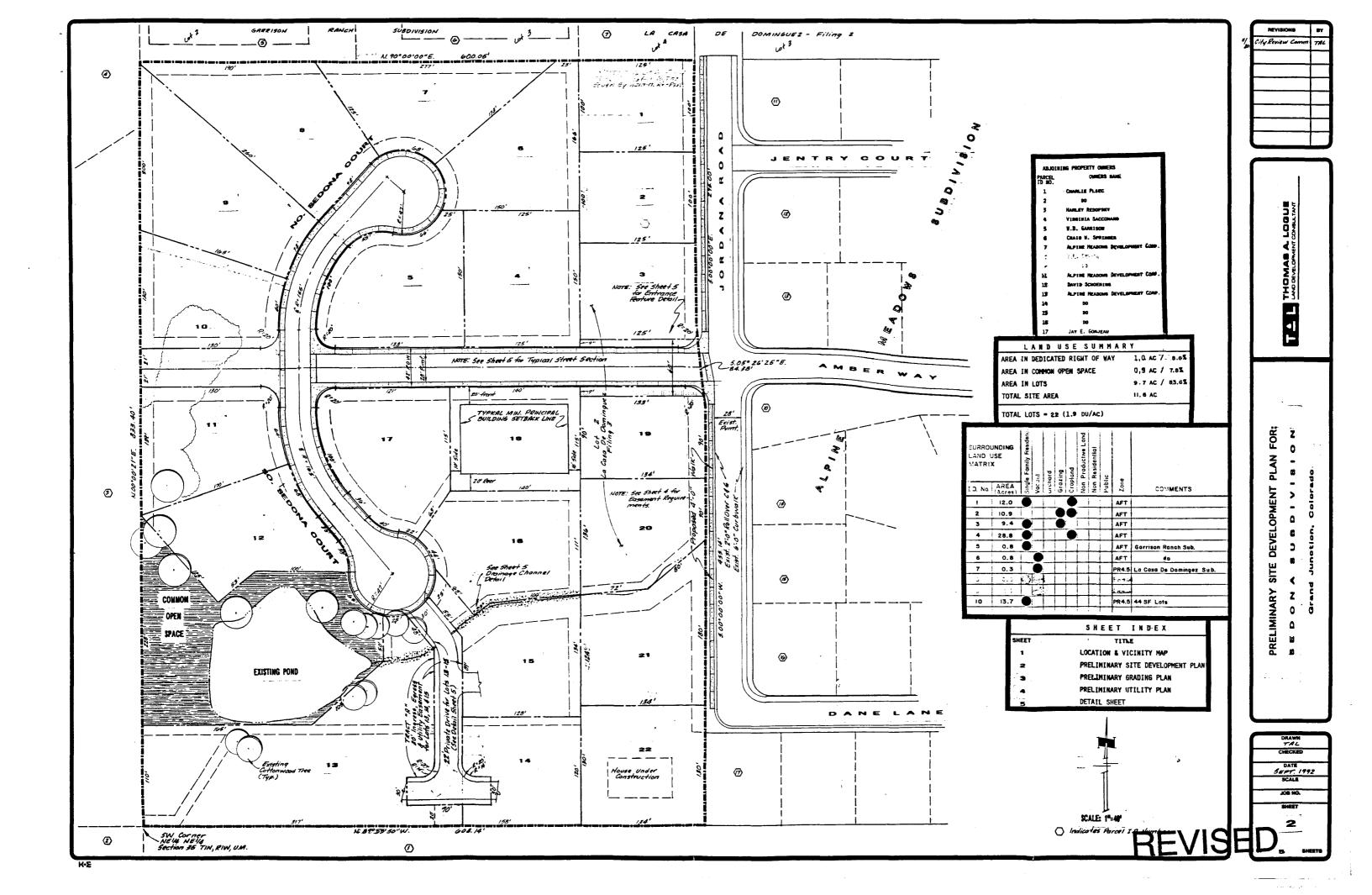
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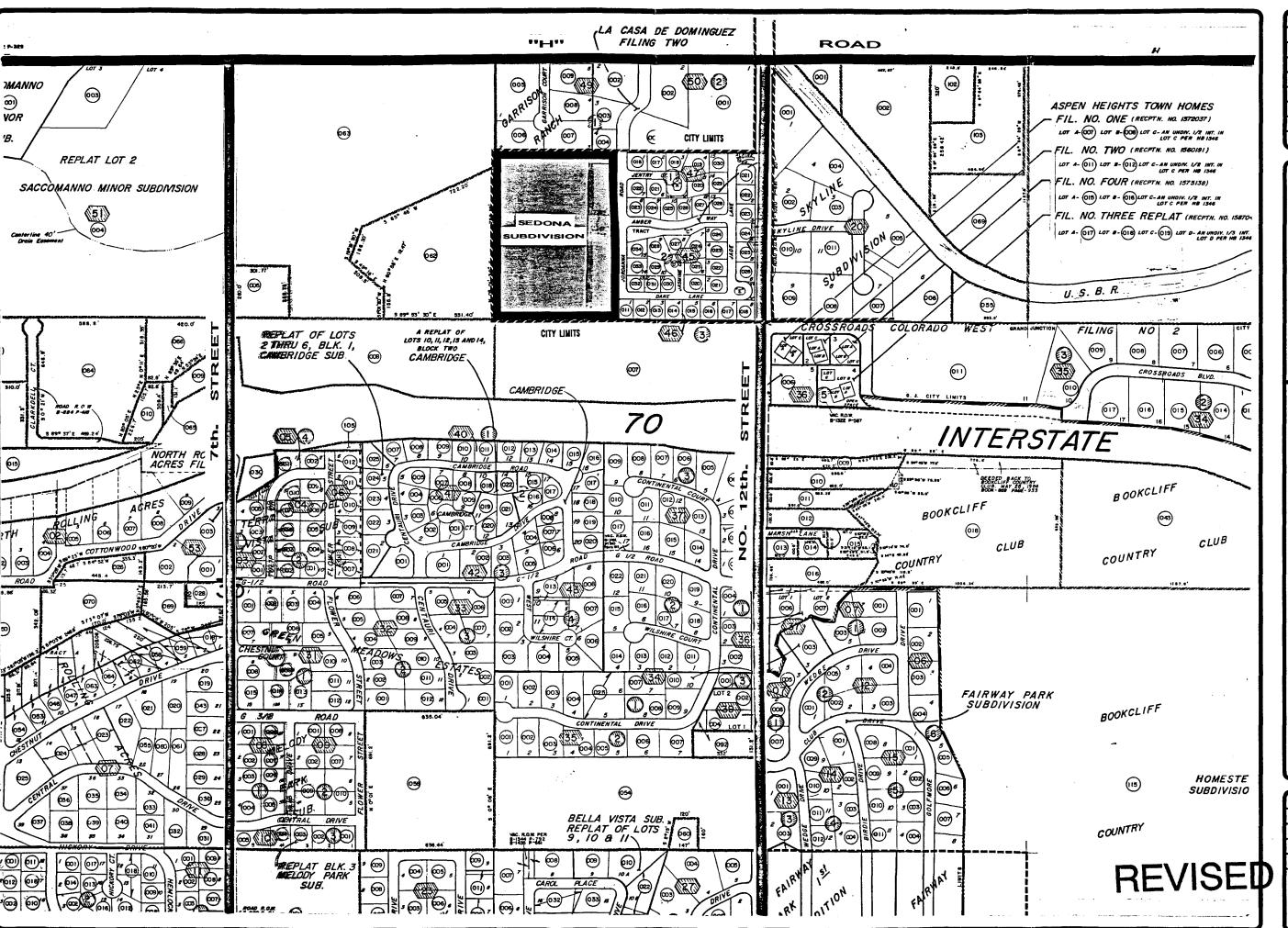
COUNTRACTOR

R. W. Holmes, Chairman of the Board of Mesa County Commissioens

ATTEST:

earl Sawyer, Mosn County Clerk



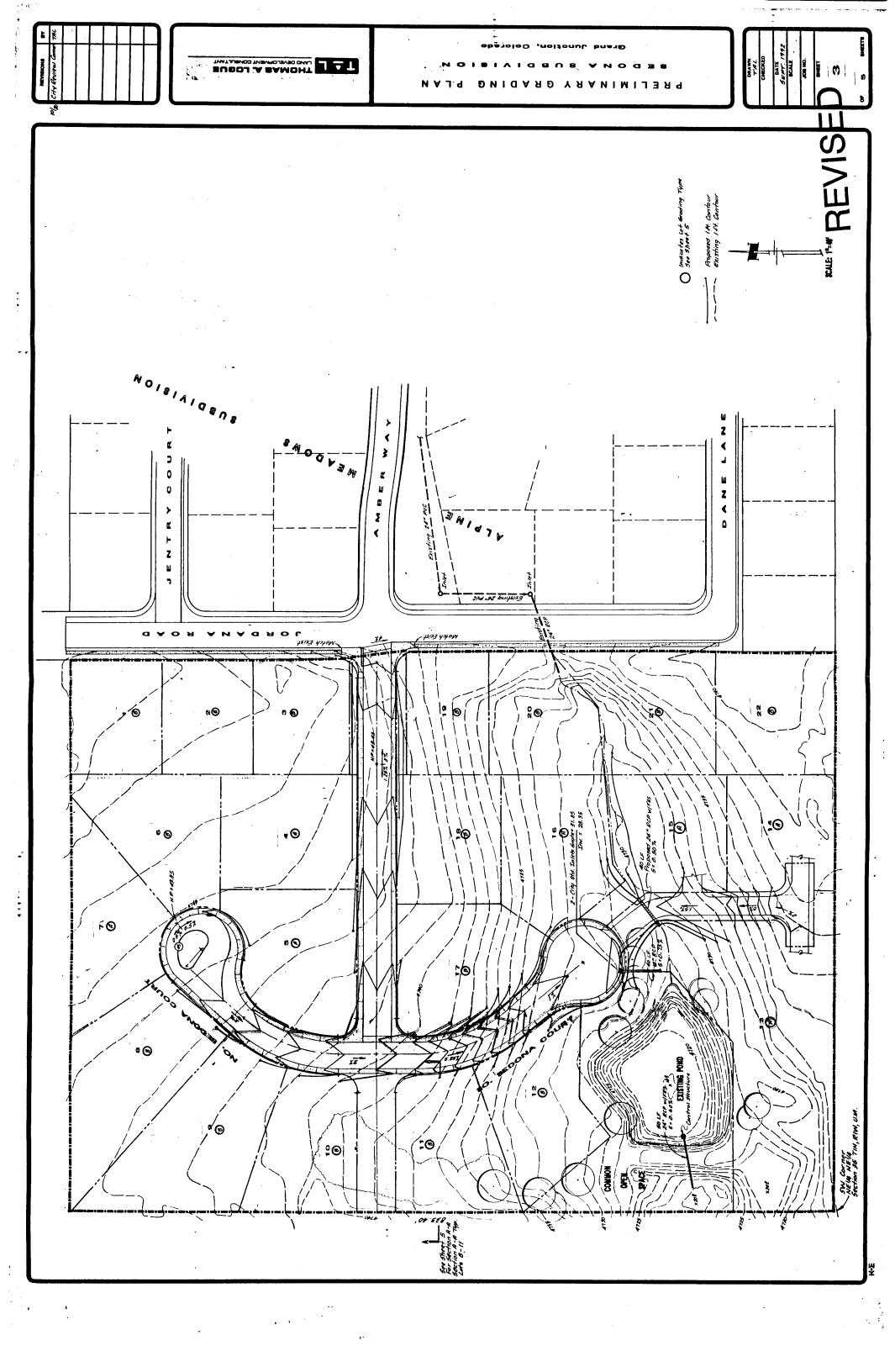


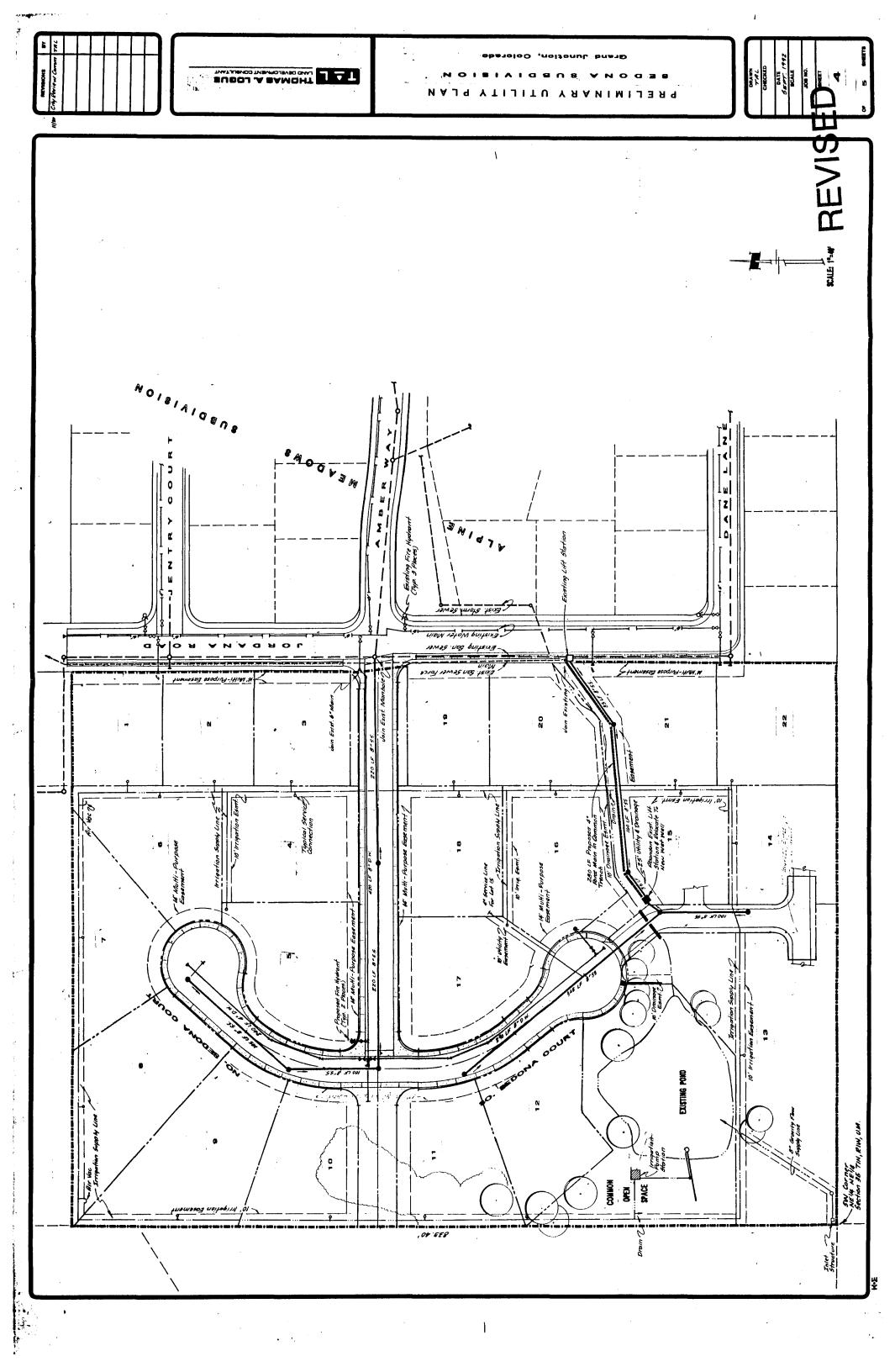
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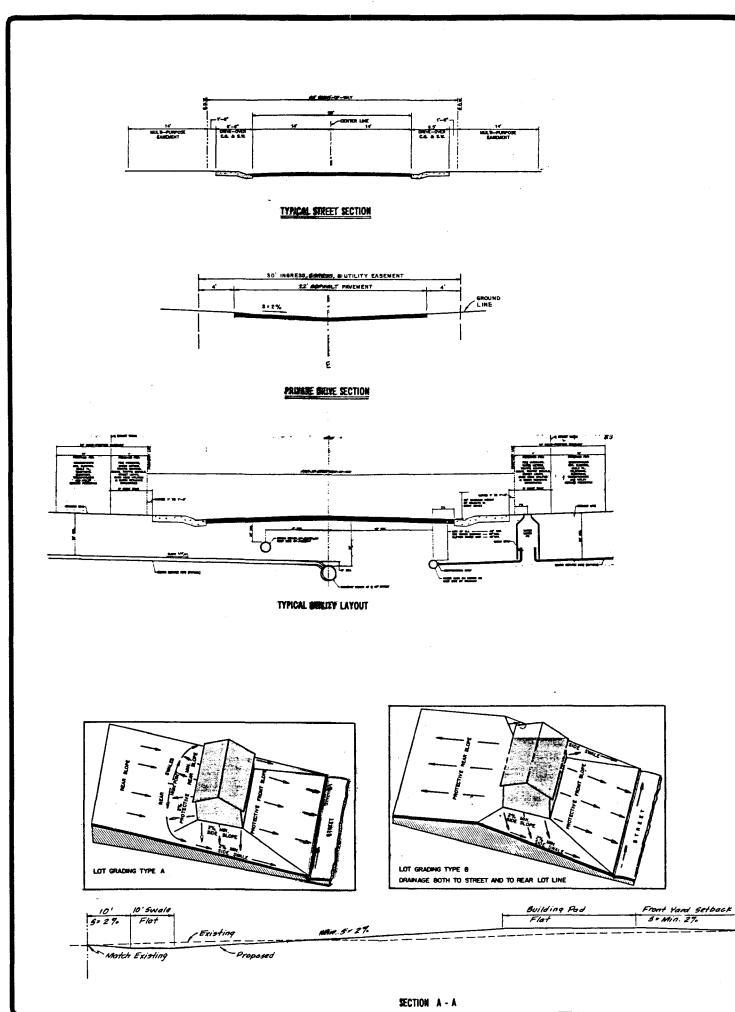
THOMAS A. LOGUE

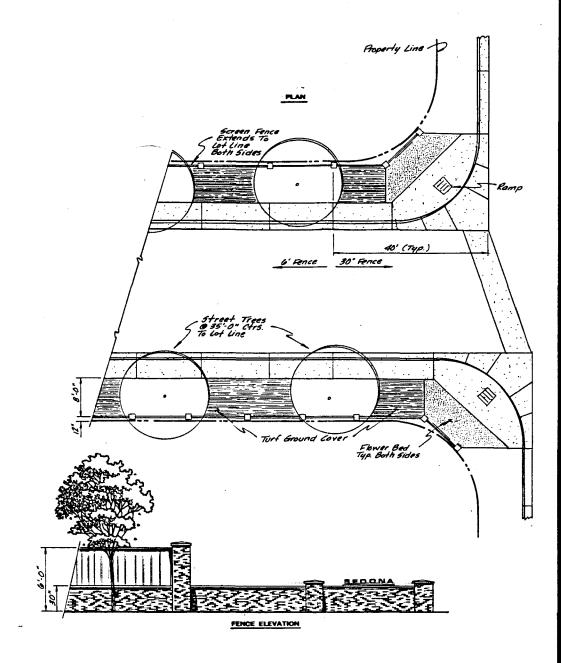
SEDONA SUBDIVISION

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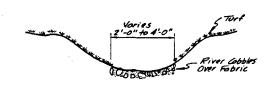








ENTRANCE FEATURE



DRAINAGE CHANNEL

TAL THOMAS A. LOGUE

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# ORDINANCE NO. 2512

# AMENDING THE 1988 UNIFORM FIRE CODE

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF GRAND JUNCTION:

That Section 10.301(c) of the 1988 Uniform Fire Code is amended by adding the following:

A Permittee shall provide a plan that provides for the following:

- (1) hydrants shall be on a looped (receiving water from more than one direction) water supply line of at least eight inches in diameter; and
- (2) the requirements set forth in the 1984 <u>Guide for Determination of Required Fire Flow</u> published by the Insurance Services Office, 160 Water Street, New York, New York, shall be met; and
- (3) based on accepted engineering methodologies, the water provider should be able to supply the amount of water as calculated pursuant to (b) above.

Exception #1: Hydrants located less than 1000 feet from a looped water line (measured along the water line between the hydrant and the looped supply source) may be placed on dead end lines (Of less than 1000 feet in length), provided the line feeding the hydrant will supply the required fire flow and be not less than eight inches. Required fire flow shall be determined pursuant to the 1984 Guide for Determination of Required Fire Flow.

Exception #2: The Fire Chief may allow a looped water line size to be reduced from eight inches to not less than six inches if the Permittee can establish by means of a plan prepared by a professional engineer, that a six inch line will supply the required fire flow and that the required fire flow is actually available from the water provider.

Introduced this 20th day of February, 199.

PASSED and ADOPTED this 20th day of March, 1991.

Attest:

Melliam E. Melinny President of the Council

Neva B. Lockhart CMC City Clerk

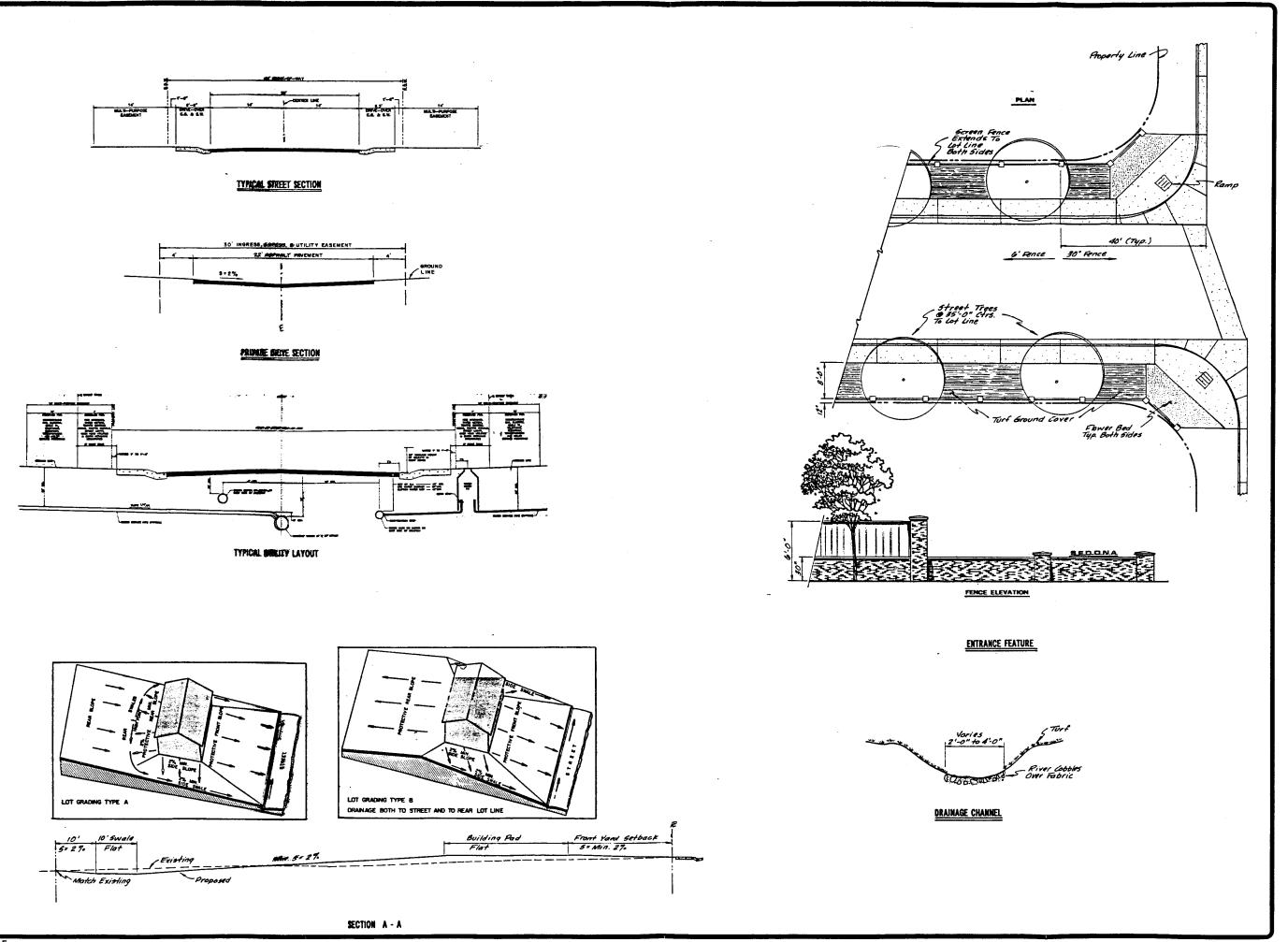
I HEREBY CERTIFY that the foregoing ordinance, being Ordinance No. 2512, was introduced, read, and ordered published by the City Council of the City of Grand Junction, Colorado, at a regular meeting of said body held on the 20th day of January, 1991, and that the same was published in The Daily Sentinel, a newspaper published and in general circulation in said City, at least ten days before its final passage.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of said City this 21st day of March, 1991.

Neva B. Lockhart, CMC

City Clerk

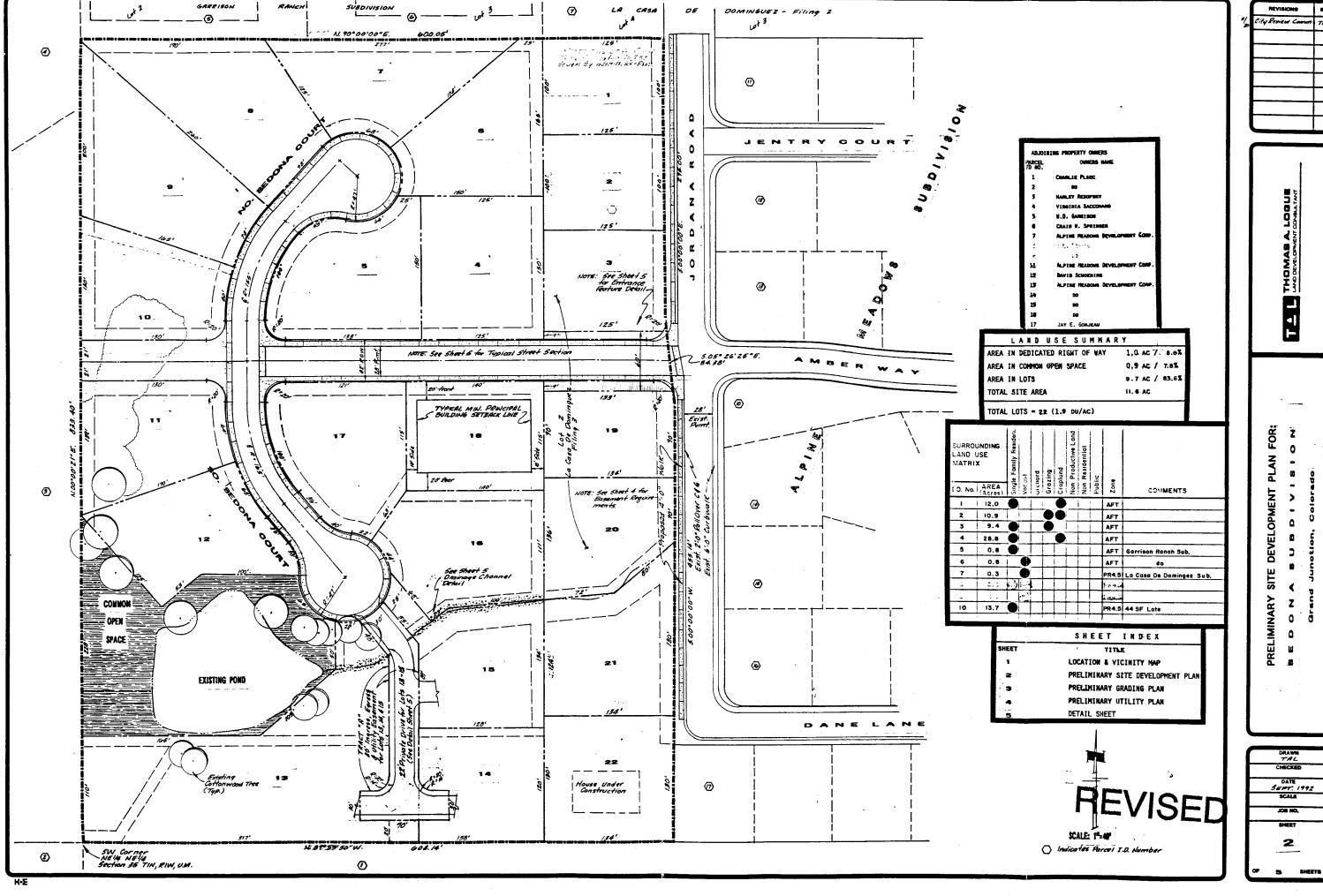
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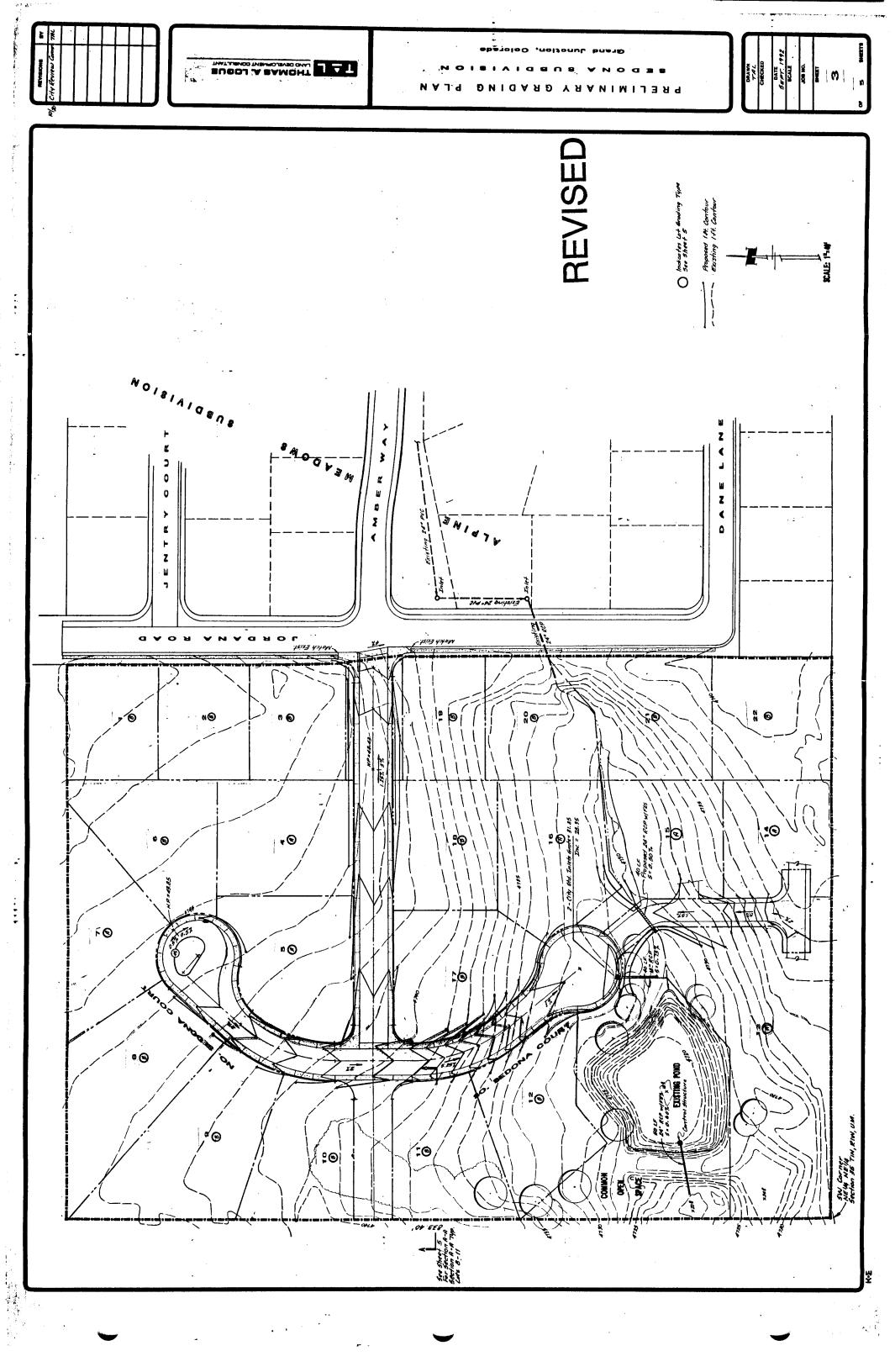


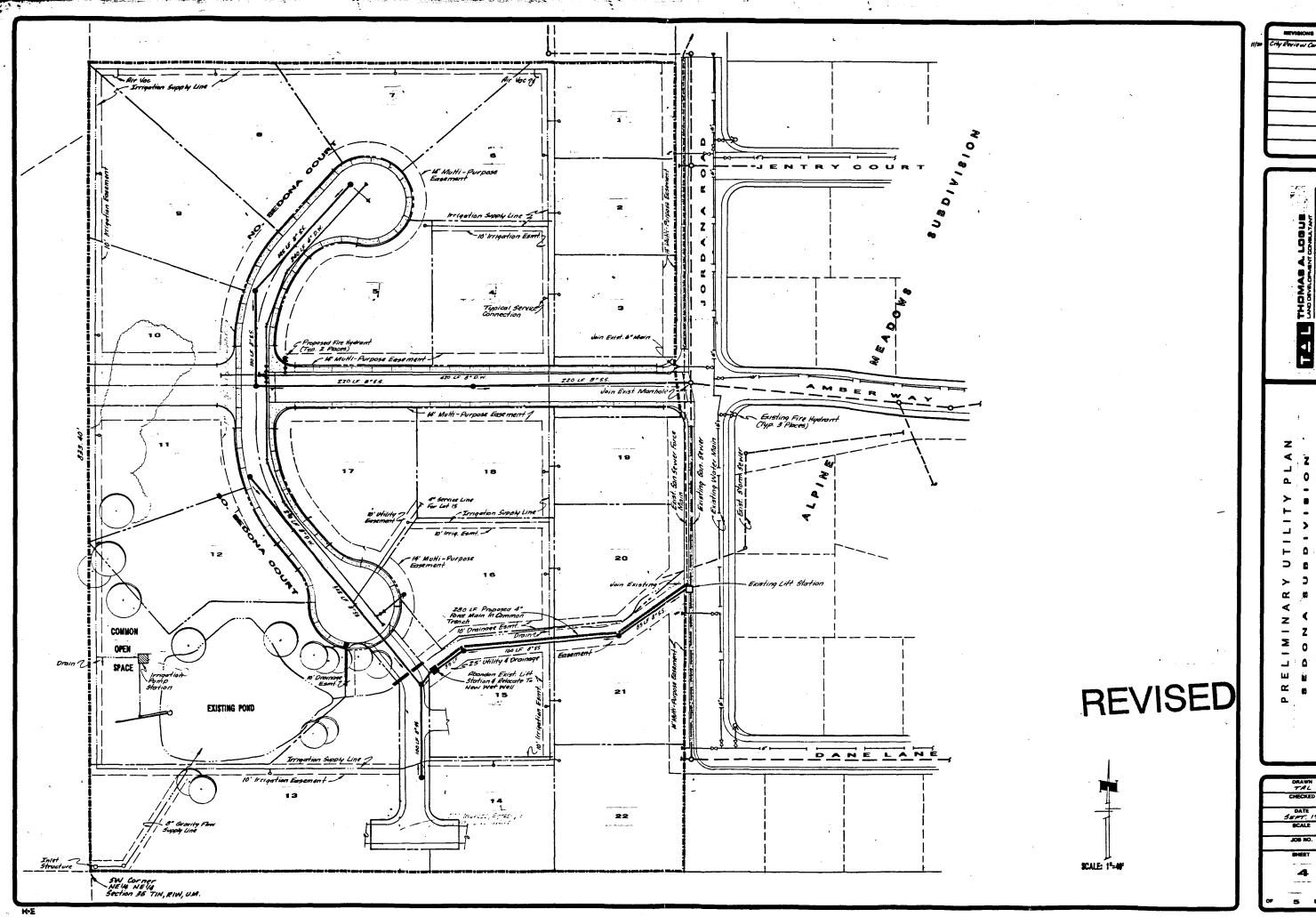
TAL THOMAS A. LOGUE

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OF 5. SHEETS







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