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Procurement Department

ADDENDUM # 2

To: File 1911-913-45-4982
RFP for: Pecan Hill Tree Removal and Sanitary Sewer Retrofit

Please note the following changes:

1. **The response due date and time are changed to January 31, 2020 at 2:00 pm.**

2. **Questions may be submitted until 2:00 pm on January 17, 2020.**

The following questions are asked:

Question 1: What is the engineered budget?
Answer 1: SAHA estimates the construction costs to fall within the $400,000 to $650,000 range.

Question 2: What effort has been put into locating the existing sewer line under the slab? Has a plumber used a camera to locate the lines and risers? If so, is there a report we can see?
Answer 2: The main lines have been scoped with a plumbing camera. The report is attached.

Question 3: If not, Will it be expected of us to locate the lines prior to excavation? If there are additional locations that aren't shown on the drawings that require additional work what would be the expectation of the contractor and owner?
Answer 3: See above answer.

Question 4: Units 115-120 do not show to be re-piped. Please provide clarification as to why we would abandon these lines.
Answer 4: Units 115 – 120 should be re-piped according to Drawing P1.1 and tied into the existing sewer line on the south side of the complex.

Question 5: What is the expectation to route the sewer line near electrical pole?
Answer 5: Please refer to Drawing P1.0, Detail 5, Pipe Trench Detail. The sewer line should be routed a minimum distance of 2x the pole diameter away from the base of the pole.

Question 6: Is there a GeoTech report available for review?
Answer 6: We have a limited Geotechnical report that was performed in 2016. The boring logs are attached.

Question 7: Will the cost of concrete chipping for exposing fittings etc...for sanitary sewer lines be addressed on a case by case scenario in order to replace sewer lines and make successful connections.
Answer 7: Concrete chipping should be included as a Unit Cost Item; although concrete chipping is not expected.

Question 8: Can we submit latest Tax Return in Lieu of Financial Statements?
Answer 8: Yes they are acceptable. All we need to do is verify the financial health of the company and that it has the capacity to accept a contract of this size without undue stress.

Question 9: Is there any As-Builts showing the foundation beam depths, thickness and lay-out?
Answer 9: We have the original construction drawings. See attached.

Question 10: Do you have As-Builts showing Depth of Sewer Piping under foundation and type of existing piping?
Answer 10: We have the original construction drawings. See attached.

Question 11: Are there As-Builts that show existing utilities in new excavation area, Electrical, Cable, Gas?
Answer 11: We have the original construction drawings. See attached.

Question 12: Drawings show 2 pipe handrail system BUT Specs descripts Stainless Steel, Painted Steel, aluminum, which is required for this project?
Answer 12: Handrail is a basis of design product that must meet the minimum specifications. Final decision for finish will be made by the Owner.

Question 13: Can Schedule 40 piping be used for the repairs of this project?
Answer 13: PVC pipe should be in compliance with ASTM listed in Specification section 221313.

Question 14: If we need to can we Core Thru the existing concrete building beans to maintain the proper fall/flow of piping?
Answer 14: Coring through the middle third of the beam depth will be allowed with Engineer's approval.

Question 15: Can more days be negotiated for completion of project?
Answer 15: If the Respondent feels the days shown are inadequate they may indicate the days they feel that will be needed on the Fee Sheet.

Question 16: Are there any Soil Test reports to tell us if rock or hard soil will be encountered while digging?
Answer 16: See answer 6.

Question 17: Manhole depth on page P1.2 , is the Manhole depth in Inches or Feet?
Answer 17: Inches. However, manhole depth should be field verified.

Question 18: If a road closure is required, can we close one side of the building for trenching at a time for dirt removal etc.?
Answer 18: This would need to be coordinated with the Project Manager and the Property Manager.

Question 19: Can the work schedule include longer day hours and include week-end hours later then 8 to 5?
Answer 19: Weekdays SAHA may allow for a 7am to 6pm schedule, weekends will be on a as needed or case by case basis.

Question 20: Can we please have the Magnitude of this project? This is needed for insurance purposes.
Answer 20: See Answer 1.

The Jan 10, 2020 site visit sign in sheets are attached.

By: Charles R Bode Date: January 13, 2020
Charles Bode Asst. Director of Procurement

SAN ANTONIO HOUSING AUTHORITY

Mandatory Site Meeting - Attendance Roster

Pecanhill Apartments – 1911-913-45-4982,
Pecanhill Tree Removal and Sanitary Sewer Retrofit
Pre-bid site Meeting
Friday January 10, 2020
10-12p.m., Pecanhill Apat., 1600 W Lawndale, San Antonio, TX, 78209

REPRESENTATIVE NAME	Organization Name & Address	Mobile Telephone	Office Phone	e- mail
Marvin E Williams	SAHA 818 S Flores	210 559-3326	210 447-6534	marvin_williams @saha.org
Raul Scott Jr	2221 E. Chavaneaux	210 251-8279	210-627-2563	Rauljr@apgc.Pro
Jorge A Zapata				jorge@apgc.Pro
Sam DE LA Rosa	Thyssen Laughlin	(210) 422-6489		sam@Laughlinf.com
Tony Cortez	Thyssen Laughlin	(210) 336-9085		Tony @ Laughlint .com
Luis AGUILAR	JAMCO VENTURES	210-844-0566		Luis@JAMCOVENTURES.COM
Joe A. Muniz	Jamco Ventures	210-270-7609		joe.muniz@jamcoventures.com
Crespin Castillo	24850 Blanco Rd.	210-389-4183	210-491-9925	ccastillo@alphabuilding.com
Jerel Center	Harper painting	210-508-1487		
Terry Harper	Harperpainting	210-844-7408		

SAN ANTONIO HOUSING AUTHORITY
Mandatory Site Meeting - Attendance Roster

Pecanhill Apartments – 1911-913-45-4982,
Pecanhill Tree Removal and Sanitary Sewer Retrofit
Pre-bid site Meeting
Thursday December 19, 2019
1-4p.m., Pecanhill Apartments, 1600 W Lawndale, San Antonio, TX, 78209

REPRESENTATIVE NAME	Organization Name & Address	Mobile Telephone	Office Phone	e- mail
Marco Casanova	MJC Contracting LLC	210 5273904		mjccontracting1@gmail

RABA KISTNER CONSULTANTS

Raba Kistner
Consultants, Inc.
12821 W. Golden Lane
San Antonio, TX 78249
P.O. Box 690287
San Antonio, TX 78269
www.rkci.com

P 210 :: 699 :: 9090
F 210 :: 699 :: 6426
TBPE Firm F-3257

Project No. ASR16-034-00
December 19, 2016

Mr. Marvin Williams, Construction Project Manager
San Antonio Housing Authority
818 S. Flores
San Antonio, Texas 78204

RE: Foundation Movement Study
Pecan Hill Apartments
1600 West Lawndale
San Antonio, Texas

Dear Mr. Williams:

RABA KISTNER Consultants, Inc. (RKCI) is pleased to submit our report of engineering services for the above referenced project. This document describes the services that RKCI has performed in accordance with the scope of work outlined in our Proposal Number PSR16-062-00 (Revised) dated July 29, 2016. We were retained to provide engineering consulting services in an effort to identify the causation of foundation movement and to provide recommendations for repairs.

In summary, the apartment complex situated at 1600 West Lawndale has experienced differential movements that are affecting the performance of the floor slab, interior partition walls and ceilings, exterior walkways, underground plumbing, facade treatments and the roofing systems. These conditions of deterioration range from mild to severe and are widespread throughout the apartment complex. Although remedial foundation repairs are not recommended at this time, other building systems require immediate attention.

We appreciate the opportunity to be of service to you on this project. Should you have any questions about the information presented in this report, or if we may be of additional assistance, please call.

Very truly yours,

RABA KISTNER CONSULTANTS, INC.

Robert L. Raffle, P.E., S.E., M.E., AIA, NCARB
Senior Forensic Architect/Engineer

Eric S. Rypple, P.E.
Manager, Forensic Services

RLR/ESR/jg

Attachments

Copies Submitted: Above (Via Email)

FOUNDATION MOVEMENT STUDY

For

PECAN HILL APARTMENTS
1600 WEST LAWNDALE
SAN ANTONIO, TEXAS

Prepared for

SAN ANTONIO HOUSING AUTHORITY
San Antonio, Texas

Prepared by

RABA KISTNER CONSULTANTS, INC.
San Antonio, Texas

PROJECT NO. ASR16-034-00

December 19, 2016

RABAKISTNER

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ATTACHMENTS

1.0 INTRODUCTION

Raba Kistner Consultants, Inc. (RKCI) was commissioned by the San Antonio Housing Authority (Client) to perform a Foundation Movement Study at Pecan Hill Apartments situated at 1600 West Lawndale in San Antonio, Texas. The purpose for this study was to assess the type and causations of cracks, separations, and sloping floor slab conditions that developed within the apartment complex buildings as well as present our findings with opinions for our Client's consideration in determining the next course of action. As part of this work, RKCI conducted an interior floor elevation survey of the ground level of all buildings in addition to non-destructive testing, plumbing leak testing, exploratory borings on the exterior and interior, test pit excavations with subsequent laboratory testing of soil samples.

This report presents the findings of our assessment conducted over the course of several months in six sections including the Introduction. Section 2 - Background Information briefly discusses the general characteristics of the facility. Section 3 - Field Study presents the visual Ground Level and Roof Assessments. Section 4 - Benchmark Installation provides a detailed explanation of that process. Section 5 - Relative Floor Elevation Surveys and Contours quantifies and interprets that data. Section 6 - Plumbing leak Testing presents the results of camera observations. Section 7 - Borings and Laboratory Tests provide an in-depth look at the site geological and soil conditions along with the results of in-house tests. Section 8 - Test Pit Observations identifies those findings. The culmination of this report is presented in Section 9 - Conclusions and Recommendations. Section 10 - Limitations outlines the limitations of this report. Attachments provides the field data collected and prepared including Appendix A – Photo Exhibits, Appendix B - Drawing Exhibits and Appendix C - Plumbing Leak Test Report.

2.0 BACKGROUND INFORMATION

Refer to Figure 1 for an aerial view of the apartment complex along with identifiers for each building based upon geographic orientation.

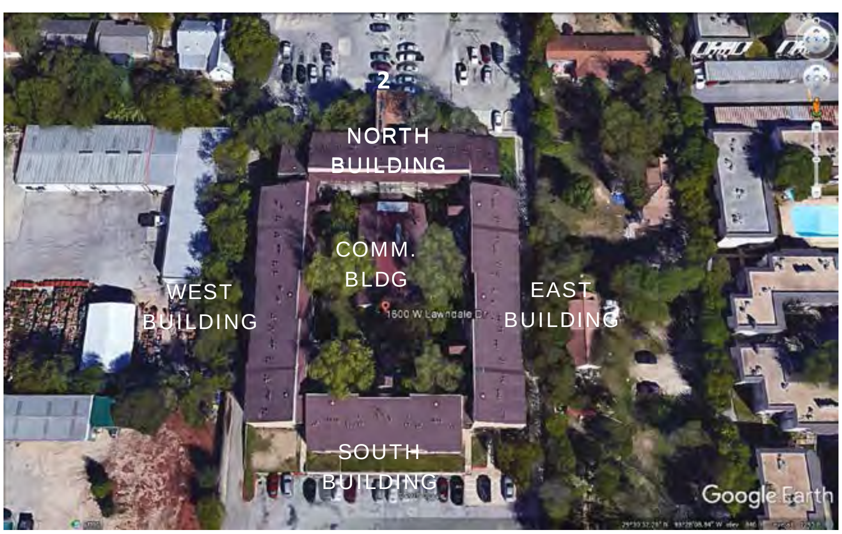

Figure 1: Aerial View of Pecan Hill Apartments (Looking North)

Copies of the original construction documents were provided to RKCI via Dropbox on July 22, 2016. These documents included:

- Drawings 1 thru 34 prepared by Ralph C. Bender & Assoc. Inc. of San Antonio, TX, dated 3-21-78 with their consultants as follows:
    - Civil/Structural – Maverick Engineering Company of Corpus Christi, TX (Dwgs. 1, 3-4, 6-8)
    - Mechanical/Electrical/Plumbing – Anderson Engineering Company of San Antonio, TX (Dwgs. 24-34)
- Drawings 1 and 2 prepared by Ralph C. Bender & Assocs. Inc. of San Antonio, TX, dated 4-24-78.
- Drawings 1 and 2 prepared by Ralph C. Bender & Assocs. Inc. of San Antonio, TX, dated 6-7-78.

The apartment complex, built circa 1978, consists of four, three-story apartment buildings and a community center totaling approximately 24,700 sq.ft. According to the original structural drawings prepared by Maverick Engineering Company, the foundations are constructed of a post-tension slab-on-grade with interior and exterior grade beams. The beams are approximately 10-inches wide and range between 18 to 30-inches in depth. Some beams are founded on a total of ninety-one (91) 12-inch diameter shallow piers that extend 3-feet into the native soils and positioned predominantly on the south end of the East Building, throughout the South and West Buildings, the southern half of the Community Building and the outside corners of all four courtyard stairs. Eighty-seven (87) additional steel piers were installed throughout the complex in 1989 in accordance with direction provided by Cutler-Gallaway Services, Inc. of San Antonio, TX as part of a modernization project to stabilize and correct foundation/slab distress conditions prevalent at that time.

The Client also provided a copy of a Condition Study prepared by Accutech Consultants, LLC of San Antonio, TX for Vickery and Associates also of San Antonio, TX, dated August, 2011. This report confirms that remedial foundation work was conducted in 1989 by Cutler-Gallaway Services, Inc. Those drawings were not available but Appendix D contains an excerpt (Drawing 4) from Accutech's Condition Study that superimposes the original concrete foundation piers and the steel piers installed in 1989 which work included:

- Installation of eighty-seven (87) steel piers
    - Along the north, east and west exterior perimeters of the North Building.
    - Along the east exterior perimeter of the East Building.
    - Along the south exterior perimeter of the South Building.
    - Along the interior and north, west and south exterior perimeters of the West Building.
- Leveling of the foundations and grouting of void spaces.
- Epoxy injection of slab cracks.
- Grinding at construction joints to provide a smooth transition.

Accutech Consultants, LLC conducted an elevation survey of the first floor level which is included in this report in Appendix D, Drawing 4.

Accutech's recommendations in 2011 were:

- "Test the plumbing system to determine if there are any leaks beneath the foundation. …"
- "Test the drain system in the courtyard to ensure it is functioning properly."
- "Regrade the area along the north side of the complex to direct water quickly away from the buildings. …"
- "Install "root barrier" along the north and east side of the complex and along the south side of the [North Building] to prevent the tree roots from going beneath the foundation…"

- "Implement a water maintenance program. …"
- "Once the above recommendations have been implemented, we recommend that a monitoring program be implemented to evaluate the effectiveness of the recommendations. This program generally consists of elevation surveys of each building on a three month interval. …"

3.0 FIELD STUDY

A. GROUND LEVEL ASSESSMENTS

Observations of the interior and exterior of the apartment complex were performed on several dates by Mr. Eric Rypple, P.E. and Mr. Robert Raffle, P.E. of RKCI. Reference is made to Appendix A - Photo Exhibits, Photos 1 through 71 and Appendix B - Drawing Exhibits, Drawing C 1.2 - Photo Key Plans.

Cracking and material deterioration were observed throughout the complex including:

- Interior cracking of drywall partitions and ceilings.
- Interior cracking near cased and framed openings.
- Interior heaving of the floor slab primarily in kitchen areas.
- Rippling of the ceiling/wall joints.
- Interior cracking of vinyl tile.
- Noticeable sloping of interior slabs.
- Exterior cracking of concrete walkways and canopy soffits.
- Exterior cracking around framed openings.
- Deterioration of stucco facades including joint displacement and separation from substrate construction.
- Deterioration of building expansion joints.
- Exterior cracking of the facade.
- Isolated cracking of perimeter building foundations.
- Deterioration of pavement joints.

It should be noted that much of the distress listed above has been patched or previously repaired.

Environmental conditions that are contributing to building distress include:

- Improper drainage along the north and west buildings.
- Downspouts empty into the planter beds or in close proximity to the building foundations.
- Downspouts serving the West Building roof slope upwards instead of a positive downward slope.
- Large trees in close proximity to the building foundations especially in the courtyard areas around the Community Building and on the North side of the North Building. In some cases, root systems are visibly protruding and appear to extend under the buildings.

B. ROOF ASSESSMENT

On November 4, 2016, Mr. Albert White, Senior Building Envelope Consultant along with Mr. Weston Tietze, E.I.T. Technician performed a visual roof assessment. Generally, the roof consists of composition shingles with isolated areas, such as the central portion of the Community Building, using a relatively flat composition system.

The existing shingled roofs are sloped at a rate of approximately 1/8" per foot on the low sloped granule surfaced asphalt roofs and between 4" and 8" per foot for the steep asphalt shingle roofs. The slope appears to have been provided by the roof's structural supports. The roofs were generally well drained although their condition ranges from poor to fair. Reference is made to Appendix A - Photo Exhibits, Photos 72 through 97 and Appendix B - Drawing Exhibits, Drawing C 1.2 - Photo Key Plans.

Numerous surface deficiencies were observed that included:

- Past repairs made with different colored asphalt shingles than the existing shingles.
- Roof to wall metal flashing missing or poorly installed and secured.
- Eave fascia boards separating from the substrate.
- Roofing material separation.
- Roof expansion joints covered with asphalt shingles.
- Vent pipe flashings are damaged or splitting.
- Rusted metal housings on roof-mounted vents.
- Leak paths into the building at stucco walls, metal flashing and eave fascia boards.
- Vent flashing damaged, unsecured or poorly secured.
- Head wall flashing is loose and damaged in several locations at stucco walls.
- Numerous soft spots in the decking from possible roof expansion joint deficiencies and water migration.
- Sealants are deteriorated and in generally poor condition.
- Roof to wall base flashing is poorly attached at the asphalt shingle roofs and could allow water migration to the interior framing especially under wind driven rain conditions.
- Hail damage from recent and past events.
- Moderate to severe deterioration of building and roof expansion joints.

4.0 BENCHMARK INSTALLATION

A permanent benchmark was installed on the south side of the property to facilitate monitoring of differential floor elevations. (Refer to Appendix B, Drawing C 1.0) A hole was bored to a depth of 30 feet and the 4-1/2 inch diameter borehole was cleaned out down to the rumination depth with straight flight augers. Sections of 2 inch diameter PVC were joined together to form a center casing between the borehole wall and the aluminum rod that is embedded into the soils at the bottom of the borehole. The aluminum rod was constructed of three, 10 foot long sections screwed together at the bottom of the hole. The outside annulus between the borehole wall and the outside of the PVC pipe was filled to a depth of about 18 inches below the top of the ground surface with a sand mixture.

A 12 inch thick layer of concrete was placed over the top of the sand to form an impermeable cap over the sand annulus. The area over the top of the benchmark location was excavated and formed to approximately 20 inches square and to a depth of approximately 4 inches below the top of the ground. An approximately 6 inch long, 4 inch diameter piece of PVC pipe, with a threaded cap, was connected to the top of the 2 inch diameter pipe to facilitate the installation of the survey pin. The excavation area was then filled with ready-mix concrete that was trowel finished on site. The top surface was sloped to allow water to drain away from the 6 inch diameter metal cap.

5.0 RELATIVE FLOOR ELEVATION SURVEYS AND CONTOURS

Mr. Robert Raffle, P.E. and Ms. Laurie Steves, E.I.T. with RKCI performed a relative floor elevation survey of the 1st floor units and the Community Center in the apartment complex. The relative elevation survey measuring equipment was placed at various locations on the interior floor surface. The relative floor elevation values were measured to the nearest hundredth of a foot; however, because the potential for error during field measurements is possible, the elevations may be considered accurate within +/-1/4 inch. The elevations were tied to the permanent benchmark set in an island on the east side of the parking lot. To facilitate the relative floor elevation survey and for the purposes of this document, an arbitrary value of 100.00 inches had been assigned to the reference benchmark. All other floor elevation measurements used in producing the drawings are relative to this assigned value of 100.00 inches. (Refer to Appendix B, Drawing C 1.0 - Relative floor elevations indicated have been corrected for floor covering thicknesses.)

A comparison of the highest and lowest elevations, the difference, straight line distance between these elevations, percent slope and equivalent elevation change over five (5) feet are provided in Table 1. Also, listed for comparison is the highest and lowest elevation difference presented in the 2011 Condition Study by Accutech Consultants LLC. Considering that the accuracy of field measurements is +/- 1/4 inch (+/- 0.25 in.), there has been no appreciable overall movement except in the West Building where the variance has reduced by nearly 2 inches. It is important to note that the percent slope presented in the table below is from the highest elevation in the building to the lowest. Localized slopes may be higher.

TABLE 1 – RELATIVE FLOOR ELEVATION DATA

Building	Highest Recorded Elevation (in)	Lowest Recorded Elevation (in)	Difference Between Highest and Lowest Elevation (in)	Difference Between Highest and Lowest Elevation (in) [Accutech Condition Study – 2011]	Distance Between Highest and Lowest Elevations*	Percent Slope (%)	Equivalent Elevation Change Over 5-ft Distance (in)
Community Center	137.32	133.48	3.84	3.72	46.4'	0.69	0.41
North Building	136.60	129.16	7.44	7.80	133.1'	0.47	0.28
East Building	135.88	129.28	6.60	6.84	149.7'	0.37	0.22
South Building	131.80	128.92	2.88	2.52	90.6'	0.26	0.16
West Building	134.2	129.64	4.56	6.48	132.3'	0.55	0.29

Note: *Change in floor elevation between these two points does not imply a straight slope.

The floor elevations were converted to contour lines and overlain onto a floor plan of the apartment complex as depicted in Appendix B, Drawing C 1.1. These can be compared to contours developed in Accutech's 2011 Condition Study which are included as Drawing 4 in Appendix D. In general, the contours are very similar except in the Community Building where a low area has developed in the central floor area potentially due to dewatering of underground soils from the root systems of adjacent trees.

Appendix B, Drawing C 1.1 can be summarized as follows:

Community Building

- The foundation/floor slab generally slopes downward from east to the west.
- Isolated high areas occur in the SE and NE corners while a low area occurs centrally below the kitchen.

North Building

- The foundation/floor slab generally slopes downward from the middle to the perimeter.
- Isolated high areas occur in the kitchen/bedroom areas of Units 102, 103 and 132 and the north perimeter of Unit 131.
- Isolated low areas occur along the north and south perimeter of Units 132 and 133.

East Building

- The foundation/floor slab generally slopes downward from west to the east.
- Isolated high areas occur along the west perimeter of Units 105 and 106 and centrally in Unit 112.

South Building

- The foundation/floor slab generally slopes downward from the north to the south and west.
- Isolated high areas occur in the NE corner of Unit 115 and the kitchen area of Unit 119.

West Building

- The foundation/floor slab generally slopes downward from the north to the south.
- Isolated high areas occur along the east perimeter of Units 129 and 130, the west perimeter of Unit 130 and the central area of Unit 123.
- An isolated low area occurs centrally in Unit 126.

6.0 PLUMBING LEAK TESTING

On December 1, 2016, Bryco Plumbing Co. Inc. performed leak testing using a Ridgid plumbing camera. Weston Tietze, E.I.T. Technician with RKCI was present during the testing. The following observations were made:

- The original plumbing drawings showed the sanitary sewer lines incorrectly. The investigation charted the general location of the sanitary sewer main lines which are presented in Appendix B, Drawing C 1.4
- In Unit 107 (East Building), a break in the 4” trunk line was discovered. It was located in the shower drain just above the trunk line. Upon inspection with the plumbing camera, it was noticed that roots were growing inside the pipe.
- In Unit 128 (West Building), a break in the 4” trunk line was discovered. It was located underneath the shower area.
- In Unit 131 (North Building), a break in the 4” trunk line was discovered. It was located underneath the master closet.
- Rises and dips were discovered throughout the underground system which were too numerous to chart.

Since major breaks in the sanitary sewer mains were discovered, static testing of the sanitary sewer was not conducted. Branch lines smaller than 4" including those extending to kitchen areas were not inspected. Similarly, hydrostatic testing of the domestic water lines was not conducted since no water lines traverse below the building foundation except at the solitary entrance to the hot water boiler room in the Community Building. Refer to Appendix C for Bryco Plumbing's report.

7.0 BORINGS AND LABORATORY TESTS

A. GEOLOGY

A review of the *Geologic Atlas of Texas, San Antonio Sheet*, indicates that this site lie between the soils/rock of the Pecan Gap Chalk and the Austin Chalk Formations.

The Austin Chalk is a form of limestone with intermittent seams of chalky marl and clay. Compared to other limestone formations in the San Antonio area such as Edwards Limestone, the Austin Chalk is comparatively softer in induration but is still considered a very hard rock substance and often contains harder, massive seams, layers, and/or ridges. The Austin Chalk also can contain karstic features in the form of open and/or clay-filled vugs, voids, and/or solution cavities that form as a result of solution movement through fractures in the rock mass.

Key geotechnical engineering considerations for development supported on this formation will be the depth to rock, the expansive nature of the overlying clays, the condition of the rock, and the presence/absence of karstic features.

The Pecan Gap Chalk weathers to form moderately deep soil and typically consists of clays, marly clays, and marl grading to chalk at depth. Thin seams of bentonite and/or bentonitic clays are also often encountered in this formation. Because such seams are typically thin and random, they are often difficult to locate and identify with standard geotechnical sampling methods and sampling intervals. Key geotechnical engineering concerns for development supported on this formation are expansive, soil-related movement, the condition of the rock, if present, and the presence/absence of karstic features.

B. SOIL BORINGS

Subsurface conditions at the site were evaluated by two exterior borings and four interior borings drilled at the locations shown on the Boring Location Map, Appendix B - Drawing C 1.3. These locations are approximate and distances were measured using a hand-held, recreational-grade GPS locator; tape; angles; pacing; etc. Ground penetrating radar was used to locate slab reinforcement and post-tensioning tendons prior to boring to avoid damage. The exterior borings were drilled to depths of 30 ft below the existing ground surface using a truck-mounted drilling rig. The interior borings were drilled to a depth of 15 ft below the existing slab surface using a track mounted geoprobe rig. During drilling operations, the following samples were collected:

Type of Sample	Number Collected
Split-Spoon (with Standard Penetration Test)	13
Undisturbed Shelby Tube	62

Each sample was visually classified in the laboratory by a member of our engineering staff. The geotechnical engineering properties of the strata were evaluated by the following tests:

Type of Test	Number Conducted
Natural Moisture Content	75
Atterberg Limits	19
Pocket Pens	53
Unconfined Compression	5

Appendix B, Drawing C 1.3 presents the results of all laboratory and field tests in graphical or numerical form on the boring logs. A key to classification terms and symbols used on the logs is also depicted there.

Standard Penetration Test results are noted as “blows per ft” on the boring logs, where “blows per ft” refers to the number of blows by a falling hammer required for 1 ft of penetration into the soil/weak rock (N-value). Where hard or dense materials were encountered, the tests were terminated at 25 blows for 0 in. of penetration or 50 blows even if one foot of penetration had not been achieved. When all 50 blows fall within the first 6 in. (seating blows), refusal “ref” for 6 in. or less will be noted on the boring logs (Refer Appendix B - Drawing C 1.3).

Samples will be retained in our laboratory for 30 days after submittal of this report. Other arrangements may be provided at the request of the Client.

C. STRATIGRAPHY

The subsurface stratigraphy at this site can be described by three generalized strata. Each stratum has been designated by grouping soils that possess similar physical and engineering characteristics. The boring logs should be consulted for more specific stratigraphic information. The lines designating the interfaces between strata on the boring logs represent approximate boundaries. Transitions between strata may be gradual.

Stratum I consists of fill materials. The fill material in the interior borings consists of sand with traces of gravel. No samples of the fill material below the pavement were taken for visual classification. This stratum extends to depths of 1 ft below the existing pavement/slab surface in our borings.

Stratum II consists of firm to hard dark brown clay with calcareous deposits. These soils are classified as plastic to highly plastic with measured plasticity indices ranging from 31 to 50. Measured moisture contents range from 14 to 24 percent. Standard Penetration Test (SPT) N-values range from 8 to 21 blows per ft. Undrained cohesion ranges from 1.95 to 2.77 tsf based on unconfined compression test data. Undrained cohesion ranges from 2.13 to 2.25 based on pocket pen test data. Unit dry weight ranges from 105 to 118 pcf. This stratum extends to depths ranging from 2-1/2 to 9 ft below the existing ground surface in our borings.

Stratum III consists of stiff to hard tan clay. These soils are classified as plastic to highly plastic with measured plasticity indices ranging from 27 to 42. Measured moisture contents range from 8 to 21 percent. Standard Penetration Test (SPT) N-values range from 17 to 28 blows per ft. Undrained cohesion ranges from 4.55 to 4.74 tsf based on unconfined compression test data. Undrained cohesion is 2.25 tsf based on pocket pen test data. Unit dry weight ranges from 121 to 125 pcf. All borings terminate in this stratum.

D. GROUNDWATER

Groundwater was not observed in the borings either during or immediately upon completion of the drilling operations. All borings remained dry during the field exploration phase. However, it is possible for groundwater to exist beneath this site at shallow depths on a transient basis. Fluctuations in groundwater levels occur due to variation in rainfall and surface water run-off.

E. EXPANSIVE SOIL-RELATED MOVEMENTS

The anticipated ground movements due to swelling of the underlying soils at the site were estimated for slab-on-grade construction using the empirical procedure, Texas Department of Transportation (TxDOT) Tex-124-E, Method for Determining the Potential Vertical Rise (PVR). PVR values ranging from 2-1/2 to 4-1/2 in. were estimated for the stratigraphic conditions encountered in our borings. A surcharge load of 1 psi (concrete slab and sand layer), an active zone of 15 ft, and dry moisture conditions were assumed in estimating the above PVR values.

The TxDOT method of estimating expansive soil-related movements is based on empirical correlations utilizing the measured plasticity indices and assuming typical seasonal fluctuations in moisture content. If desired, other methods of estimating expansive soil-related movements are available, such as estimations based on swell tests and/or soil-suction analyses. However, the performance of these tests and the detailed analysis of expansive soil-related movements were beyond the scope of the current study. It should also be noted that actual movements can exceed the calculated PVR values due to isolated changes in moisture content (such as due to leaks, landscape watering....) or if water seeps into the soils to greater depths than the assumed active zone depth due to deep trenching or excavations.

F. CHARACTERISTICS OF EXPANSIVE SOILS

The clay soils encountered in the borings are considered to be expansive to highly expansive soils. Expansive soils are clay soils that exhibit volume changes with changes in soil water content. Expansive soils shrink or reduce their volume when they desiccate (damp to dry) and swell or increase their volume when they gain water (moist to wet).

Expansive soils are often identified by the Atterberg Limits laboratory test. The Atterberg Limits test provides two soil parameters, Liquid Limit and Plastic Limit. The Liquid Limit is the water content of the soil mass at which clay begins to act as a viscous liquid. The Plastic Limit is the water content of the soil mass at which a clay soil begins to break apart and loses its ability to deform without breaking into pieces. The numerical difference between the Liquid Limit and Plastic Limit is known as the Plasticity Index. Generally, the shrink/swell potential of a clay soil increases as the Plasticity Index increases. Therefore, clay soils with relatively large Plasticity Indices generally exhibit greater shrink/swell behavior than clay soils with relatively small Plasticity Indices.

Since the shrinking and swelling behavior of the clay soils depends on changes in soil moisture, satisfactory long-term performance of a foundation is affected by conditions that can affect soil water content. Such conditions may include climate, vegetation, plumbing leaks, irrigation, and site drainage. Semi-arid climates (climates where periods of rainfall are followed by extended periods without rainfall) are more susceptible to shrink/swell behavior than climates that tend to remain either wet or dry/desiccated.

In addition, the type and extent of vegetation affects the water content of the soil since some types of trees, shrubs, and grasses require more moisture than others. The extent to which the vegetation is watered (or not watered) also directly affects soil moisture conditions, as do the surface drainage conditions around a foundation. These conditions are prevalent at this site where mature trees and shrubs were observed adjacent to the building.

G. FACTORS THAT MAY CONTRIBUTE TO DIFFERENTIAL FOUNDATION MOVEMENT

There are several factors that may contribute to differential movement of slab-on grade foundations. Some of those factors include the presence of fill soil and the condition of its placement, volumetric changes of expansive soils, vegetation effects, variations in climatic conditions, and poor surface drainage. The degree with which these factors impact the performance of the foundations and the manner in which the foundations deflect depends greatly upon their stiffness, which is a factor of design and construction practices.

Typically, when expansive soils dry from a moistened state, the soil volume decreases (shrink). Downward movement of a foundation can occur due to decreasing support for the foundation due to soil shrinkage. Soil water content beneath an existing foundation can decrease due to drying/desiccating of the surficial soil around the foundation and vegetation removing water via root systems. Cyclical wetting and drying/desiccating of the soils that support a foundation can cause recurrent differential foundation movement.

Conversely, when moisture is introduced into these soils, the soil volume increases (swell). These swell pressures can cause upward movement of a foundation. There are many possible moisture sources that can potentially increase the water content of clay soils below a foundation such as plumbing leaks, poor surface drainage, extensive landscape watering, and roof runoff discharge to name a few. This is particularly true of this site where plumbing leaks have occurred, mature trees are in close proximity to the foundations, and the downspouts empty into the planter beds or in close proximity to the foundations.

8.0 TEST PIT OBSERVATIONS

Two test pits were dug by GeoTest at the site under the observation of Robert Raffle, P.E. from RKCI. Test Pit 1 was located directly below the southern building expansion joint of the West Building and Test Pit 2 was located directly below the southern building expansion joint of the East Building. Reference is made to Appendix A, Photos 68 ad 69, respectively and Appendix B - Drawing C 1.2. Cracks in the perimeter foundation beams were noted to extend through the members but there was no differential movement on either side of the cracks. The concrete foundation beams and the portion of drilled piers that were visible appeared solid with no deterioration, spalling or exposed reinforcement. The drilled pier at Test Pit 1 was just north of the beam crack while the drilled pier at Test Pit 2 was directly below the beam crack.

9.0 CONCLUSIONS AND RECOMMENDATIONS

A. FOUNDATIONS

The ground supported beam and slab foundations of the apartment complex buildings have been adversely affected by expansive, soil related movements resulting from the condition of the fill materials, plumbing leaks, poor drainage conditions, and vegetation. The active soil zone in the San Antonio area is known to vary from about 15 to 20 feet below ground surface and is described as the zone of soil in which the moisture content in the soils varies with changes in the climate.

Although an aggressive approach to mitigating the foundation movements by adding more drilled piers or underpinning could be undertaken, it is RKCI's opinion that remedying the causes affecting soil moisture conditions be implemented first followed by a re-evaluation using floor elevation monitoring. We believe this to be the more cost effective approach for the following reasons:

- Although proper design and installation of underpinning piers can beneficially "level" and provide support for grade beams subjected to subgrade settlement and/or shrinkage, underpinning piers does not counteract subgrade heave conditions.
- By addressing the primary causes of soil moisture changes and allowing the foundations to stabilize, we get a better picture of where underpinning can be beneficial.
- Underpinning the foundation may cause further damage to the existing sanitary sewer and domestic water lines.
- In difference to other SAHA apartment complexes experiencing significant building distress due to foundation movements, it is important to reiterate that ninety-one (91) short concrete piers were installed originally and eighty-seven (87) steel piers were added in 1989 and that the floor elevation patterns measured in 2011 are not appreciably different to those presented in this report.

B. ENVIRONMENTAL CONDITIONS

The first priorities should be to remove the large trees and shrubs in close proximity to the building foundations both along the apartment building perimeters and within the courtyard and remedy the poor or improper drainage conditions that exist along the North and West Buildings by providing positive drainage away the building perimeters by either regrading, resloping existing rainwater conductors and/or adding new conductors/trenches.

C. PLUMBING SYSTEMS

Following a period of 6 to 12 months after all environmental conditions have been rectified, the underground sanitary sewer main breaks need to be repaired but, more importantly, the rises and dips observed during the leak testing must be eliminated also. RKCI recommends abandoning the existing sanitary sewer mains that run under the buildings and replumb the apartment units to direct effluent flow to the rear of each apartment tying into new sanitary sewer mains located along the exterior periphery of the apartment complex. New tie-ins would be detailed with flexible connections to mitigate effects of soil movements.

D. ROOF SYSTEMS & BUILDING EXPANSION JOINTS

The roof systems are generally in poor condition. After the recommendations under plumbing systems are complete and following a stabilization period of 6 to 12 months, RKCI recommends complete roof replacement or major roof and flashing repairs.

In conjunction with roof replacement/repair, the building expansion joints located in the exterior walls, building roofs and canopy roofs need to be replaced.

E. GENERAL REPAIRS AND MONITORING

Crack repairs were evidenced throughout the apartment complex in various interior and exterior assemblies. These repairs will need to continue as required; however, their extent and severity should diminish as major repairs recommended above are completed. Of immediate importance will be the replacement of sheathing, stucco veneer and related insulation and flashing at the 3rd floor walkway canopy facades between the North and East Building and the North and West Building (Refer to Appendix A, Photos 70, 71, 83 and 94).

Floor elevation monitoring on an annual basis for a period of five (5) years should be undertaken to evaluate the effectiveness of major environmental, plumbing, roof and building expansion joint repairs.

10.0 LIMITATIONS

The information provided in this document was prepared for the San Antonio Housing Authority (Client), and may not contain sufficient information for others and/or for other uses. The comments, opinions, and recommendations submitted in this report are based on our visual observations, the field data collected as part of the floor slope measurements and non-destructive testing, and our understanding of the project information provided to us by others. Not all distress conditions throughout the building were documented; however, general representations of the observed conditions are discussed in this document. Additional conditions may exist or may have existed at the time of our observations. If the information described in this document that was provided by others is incorrect, or if additional information becomes available, RKCI may need to revise the opinions and recommendations presented herein.

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APPENDIX A

Photo Exhibits

Photo 1 – Walkway Cracks near Unit 113

Photo 2 – Walkway Cracks near SE Community Exit

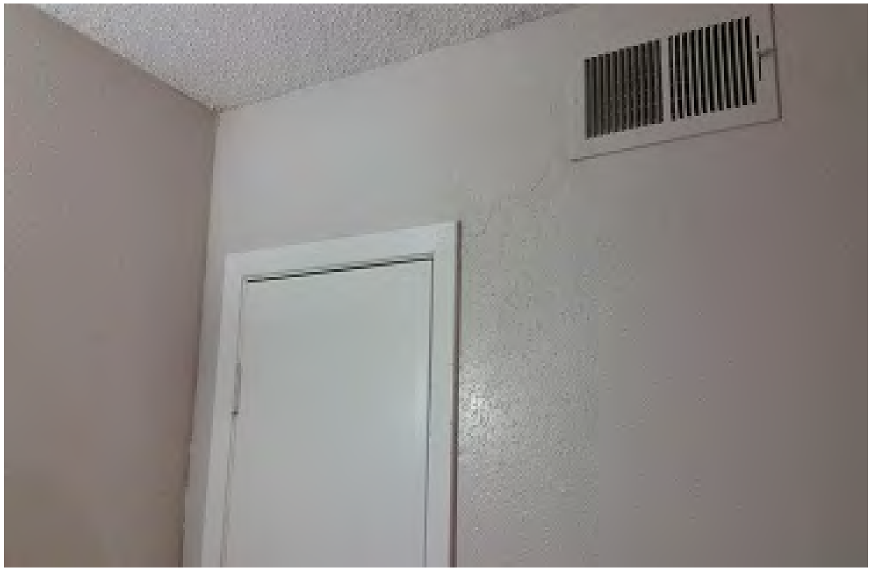


Photo 3 – Unit 114: Wall Cracks near Closet

Photo 4 – Unit 113: South Wall Crack in Living Room

Photo 5 – Unit 113: Cracks at Kitchen Counter

Photo 6 – Unit 113: Cracks at Kitchen Counter

Photo 7 – Unit 113: Cracks above doors in Hallway

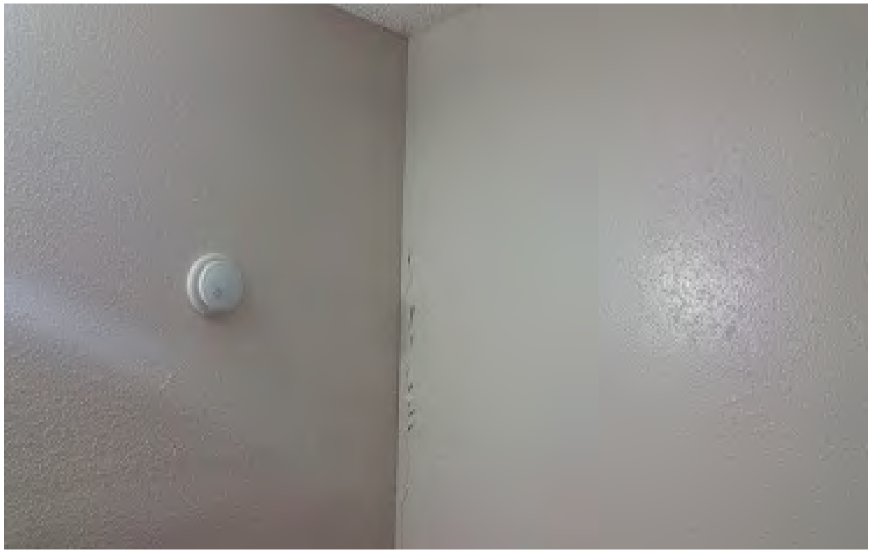


Photo 8 – Unit 113: Crack in NE corner of Bedroom

Photo 9 – Unit 113: Cracks Shower Corner

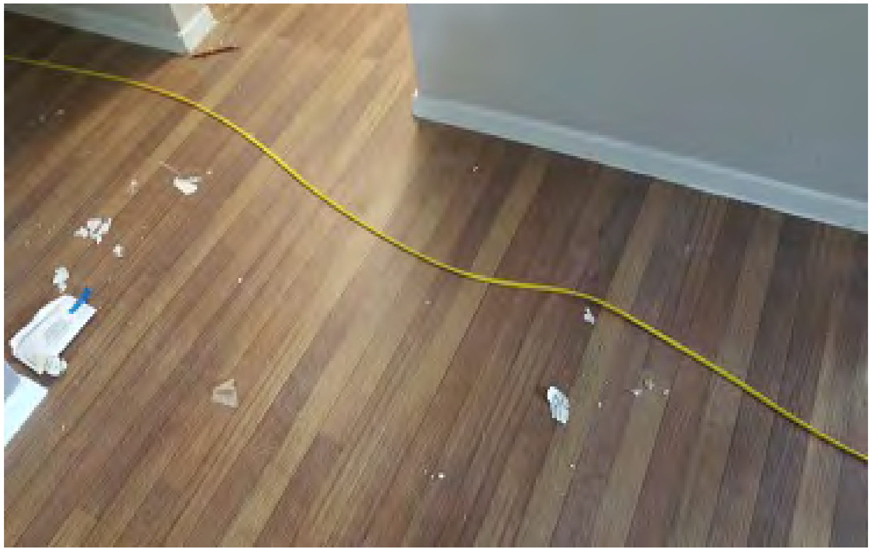


Photo 10 – Unit 112: Heaving of Floor near Kitchen

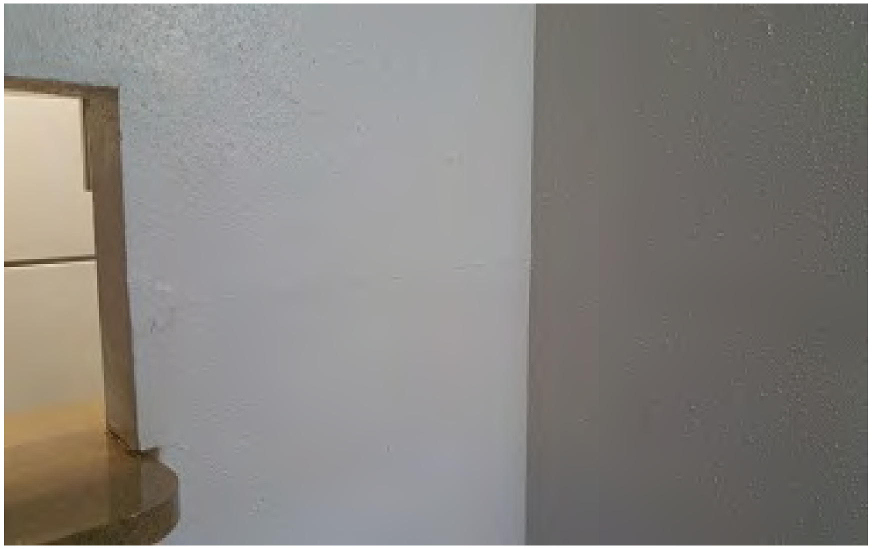


Photo 11 – Unit 112: Crack in SE Corner of Living Room

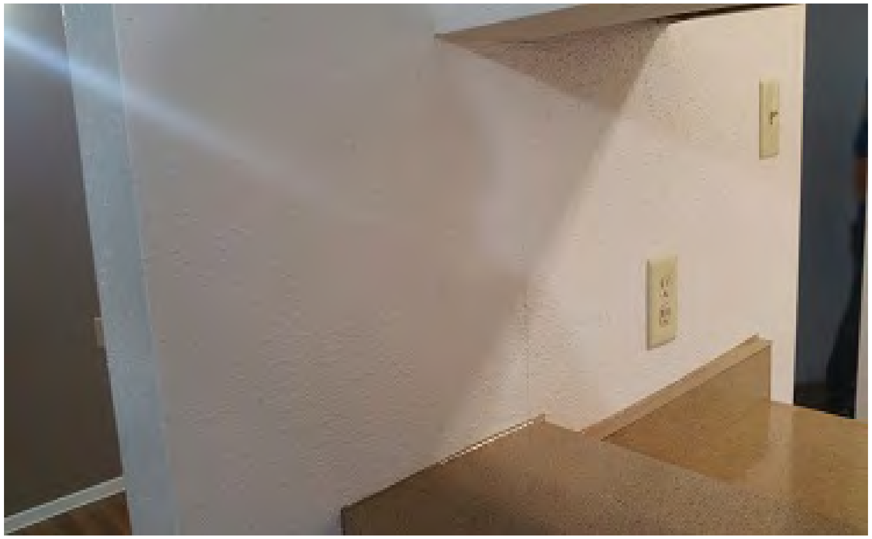


Photo 12 – Unit 112: Crack near Kitchen Counter

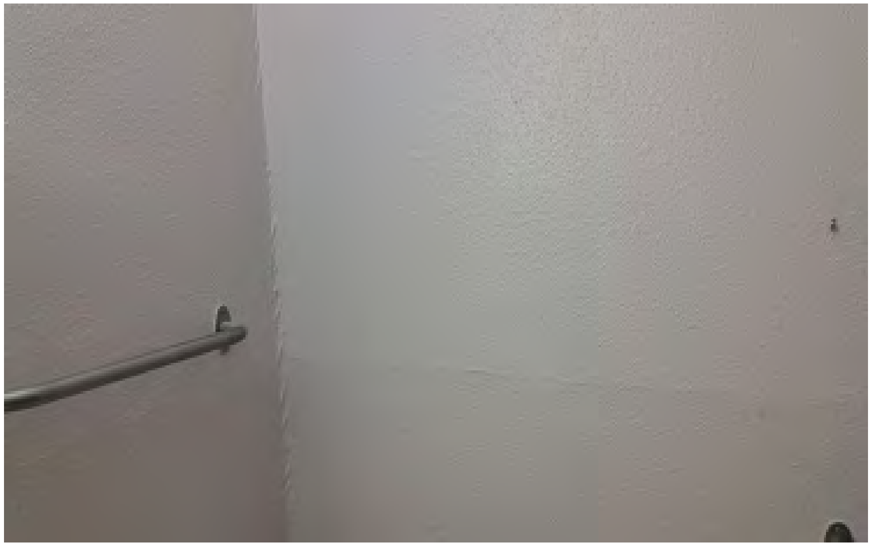


Photo 13 – Unit 112: Cracks in Bathroom

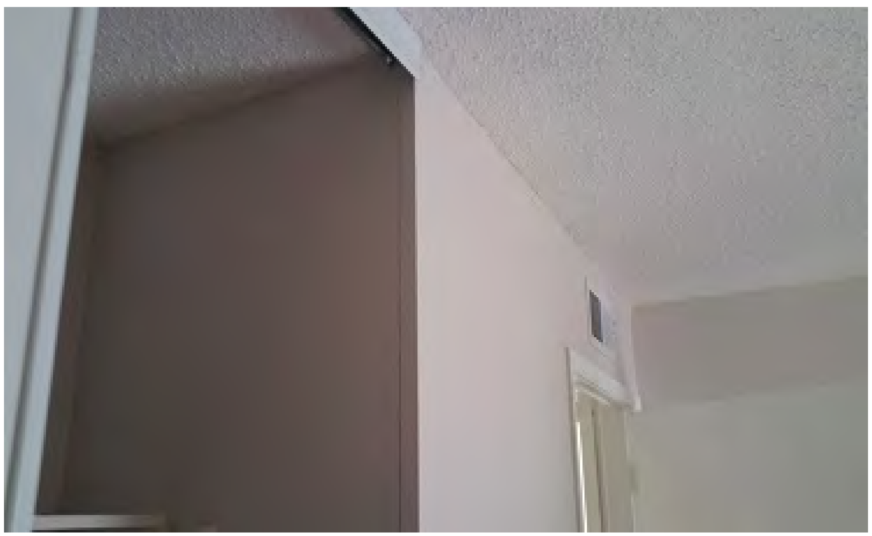


Photo 14 – Unit 112: Cracks near Bedroom Closet

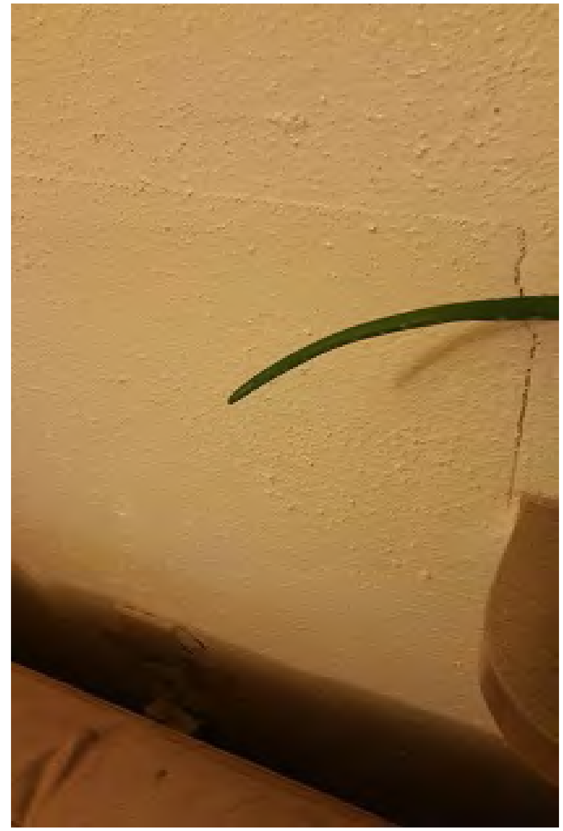


Photo 15 – Unit 111: Crack near Kitchen Counter

Photo 17 – Unit 108: Wall Crack in Living Room

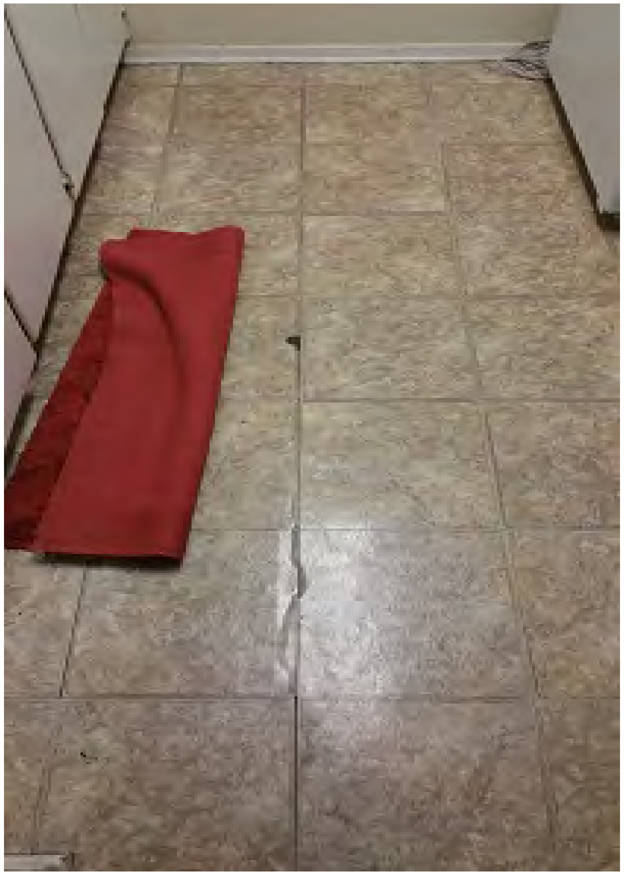


Photo 16 – Unit 111: Heaving and Crack in Kitchen Floor

Photo 18 –Walkway Crack near Unit 107

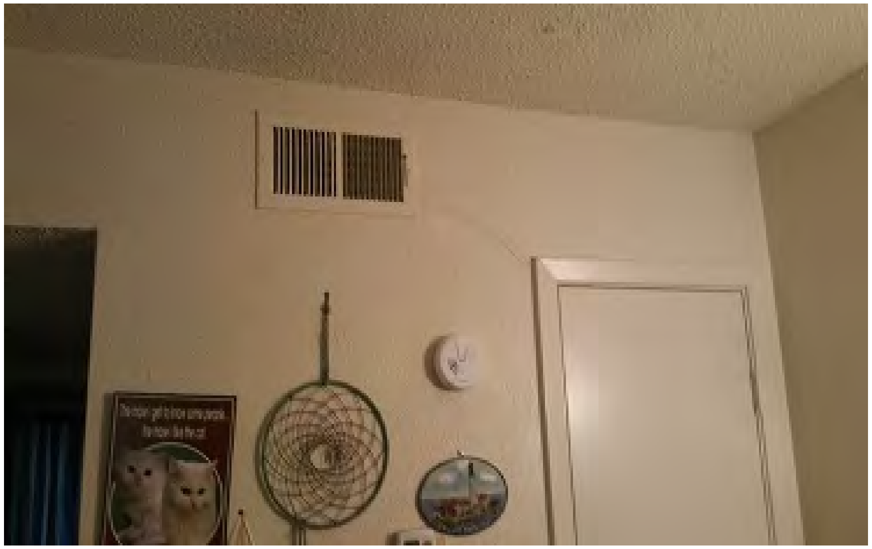


Photo 19 – Unit 105: Crack in Living Room near Closet

Photo 20 – Walkway Crack near NE Community Exit

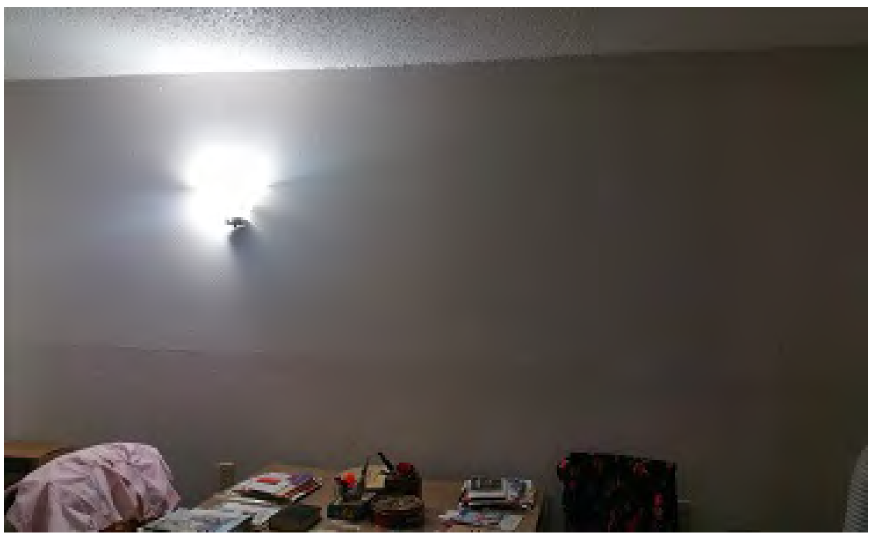


Photo 21 – Unit 103: Crack in Living Room

Photo 22 – Walkway Crack near Unit 102

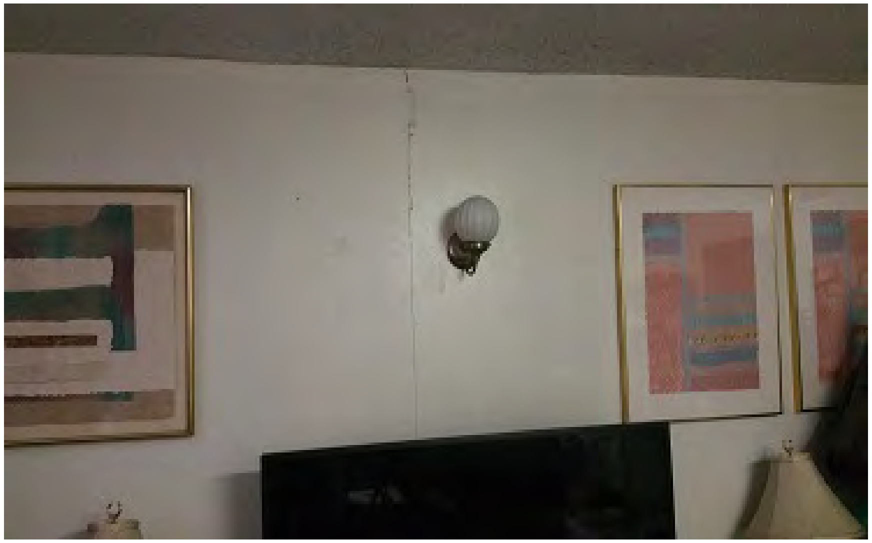


Photo 23 – Unit 134: Crack in Living Room

Photo 24 – Walkway Ceiling Crack near Unit 132

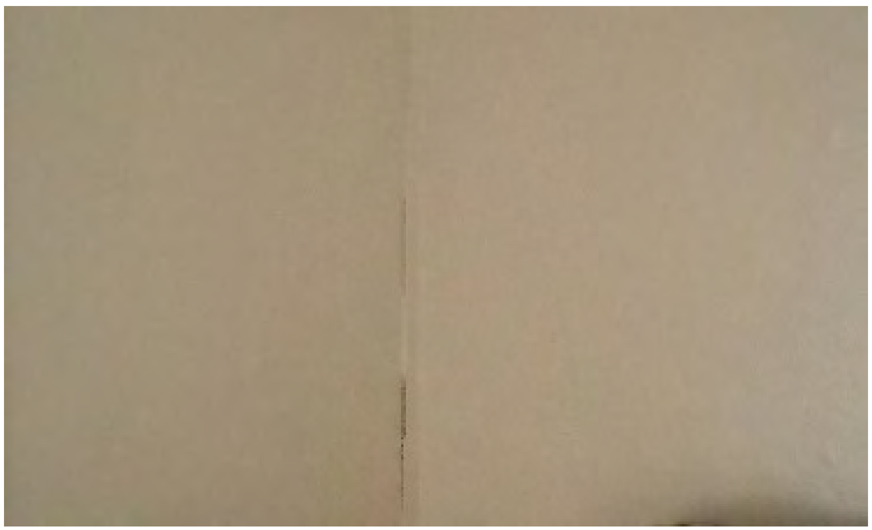


Photo 25 – Unit 131: Crack in NE Corner of Bedroom

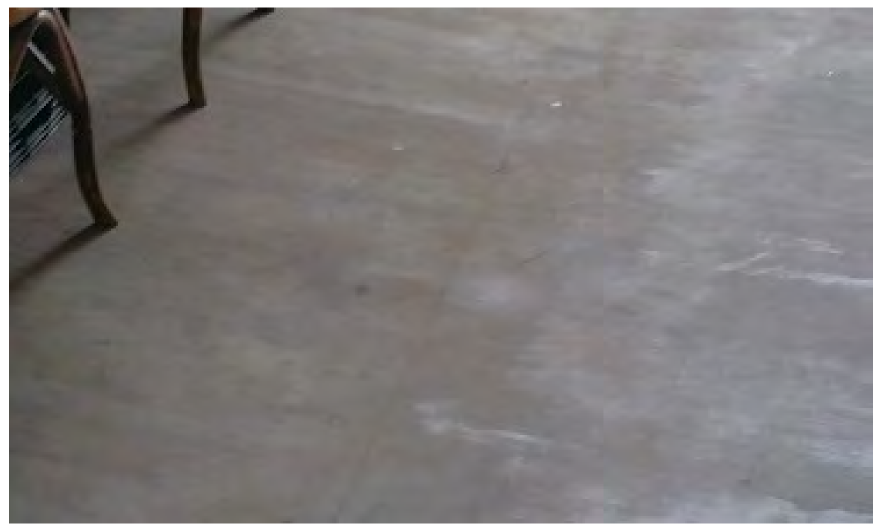


Photo 26 – Walkway Crack near NW Community Exit

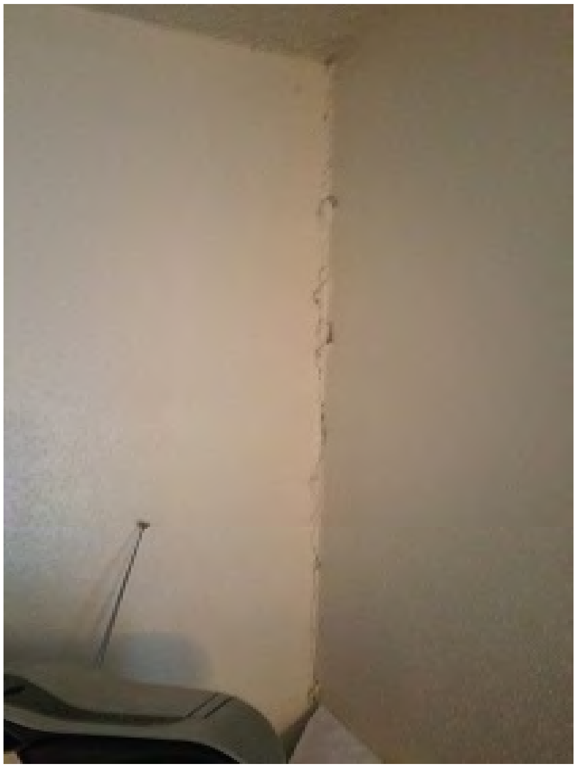


Photo 27 – Unit 129: Crack in SW Corner of Bedroom

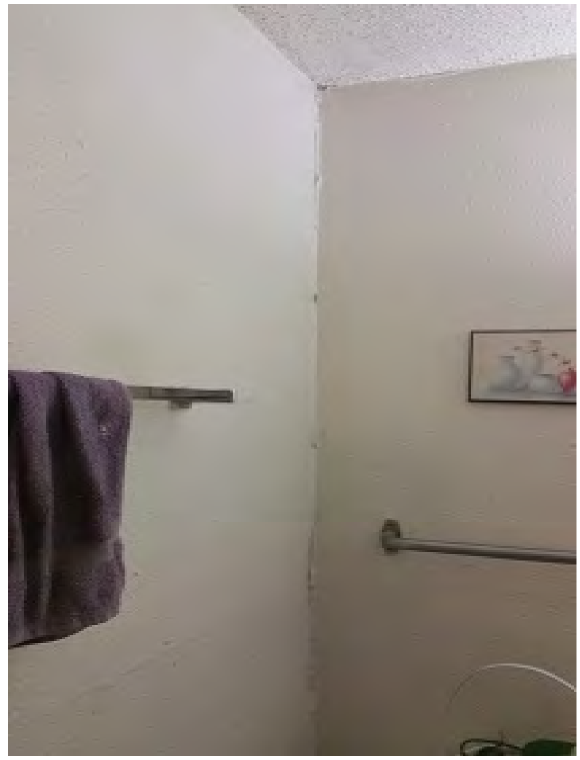


Photo 28 – Unit 127: Crack in NW Corner of Bathroom

Photo 29 – 2nd Floor: Walkway Crack

Photo 30 – 2nd Floor: Walkway Ceiling Crack

Photo 31 – 2nd Floor: Walkway Crack

Photo 32 – 2nd Floor: Walkway Crack

Photo 33 – 2nd Floor: Walkway Crack

Photo 34 – 2nd Floor: Wall Crack near Elevator Lobby

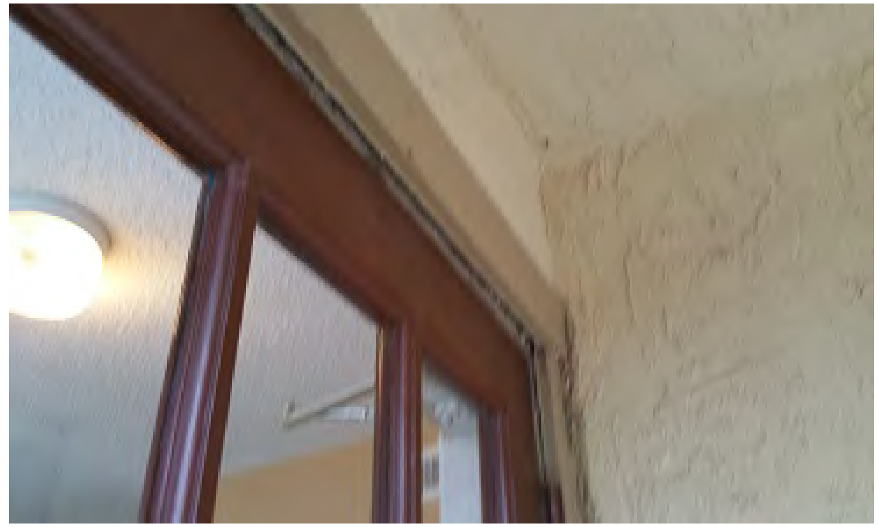


Photo 35 – 2nd Floor: Cracking at Door Frame near Elevator Lobby

Photo 36 – 2nd Floor: Walkway Crack

Photo 37 – 2nd Floor: Walkway Crack

Photo 38 – 3rd Floor: Walkway Crack

Photo 39 – 3rd Floor: Walkway Crack

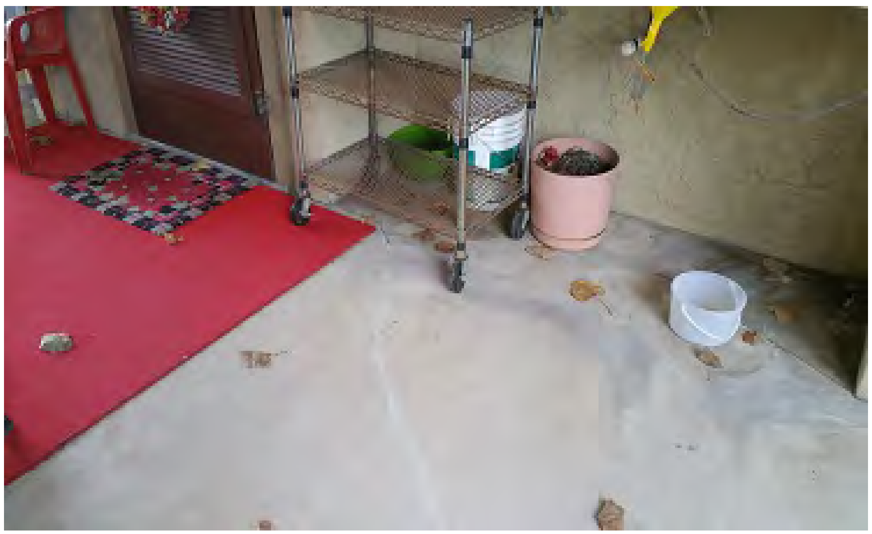


Photo 40 – 3rd Floor: Walkway Crack

Photo 41 – 3rd Floor: Walkway Crack

Photo 42 – 3rd Floor: Walkway Crack

Photo 43 – 3rd Floor: Walkway Crack

Photo 44 – 3rd Floor: Crack at Door Frame near Elevator Lobby

Photo 45 – 3rd Floor: Walkway Crack

Photo 47 – West Building: Deteriorated North Expansion Joint

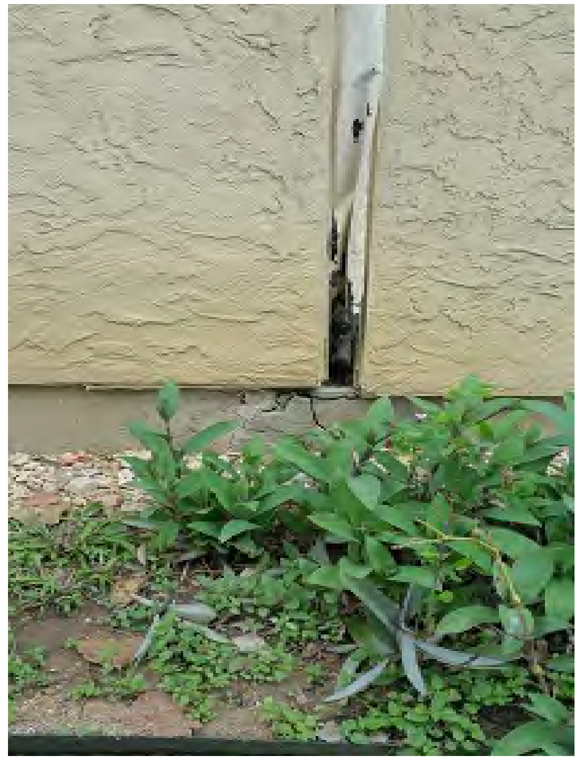


Photo 48 – West Building: Deteriorated North Expansion Joint at Base

Photo 46 – 3rd Floor: Walkway Crack

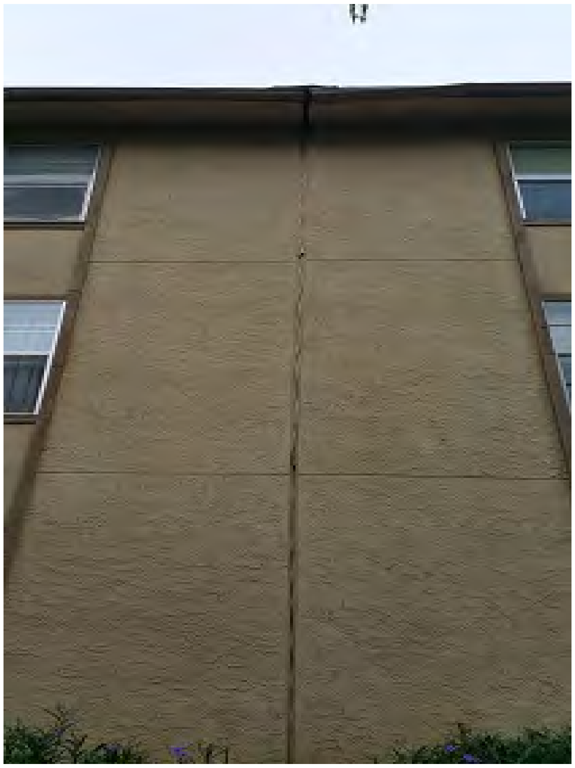


Photo 49 – West Building: Deteriorated South Expansion Joint

Photo 50 – West Building: Deteriorated South Expansion Joint at Base

Photo 51 – West Building Foundation Crack

Photo 52 – West Building: Improper Drainage (Looking South)

Photo 53 – West Building: Improper Drainage (Looking North)

Photo 54 – West Building: South Façade Joint Separation

Photo 55 – South Building: East Façade Joint Separation

Photo 56 – East Building: Deteriorated South Expansion Joint

Photo 57 – East Building: Deteriorated South Expansion Joint at Base

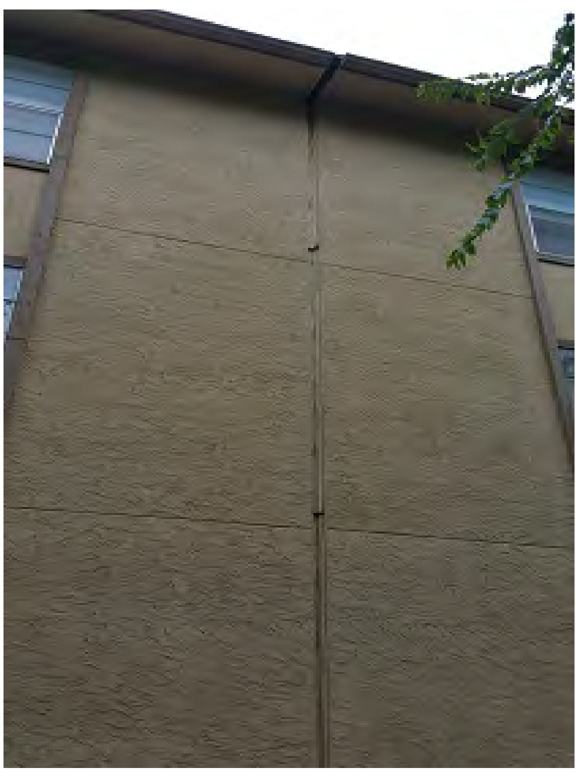


Photo 58 - East Building: Deteriorated North Expansion Joint

Photo 59 - East Building: Deteriorated North Expansion Joint at Base

Photo 60 – East Building: North Facade

Photo 61 – North Building: East Façade with Crack below Window

Photo 62 –North Parking Lot: Deteriorated Concrete Joints

Photo 65 – North Building: North Façade Window Area with Vertical Crack and Sheetmetal Dam at Base

Photo 63 – North Parking Lot: Deteriorated Concrete Joints

Photo 64 –North Parking Lot: Deteriorated Concrete Joints

Photo 66 – North Building: Improper Drainage back towards Building (Looking West)

Photo 67 – North Building: Improper Drainage at NW Corner

Photo 68 –West Building: Test Pit 1

Photo 69 – East Building: Test Pit 2

Photo 70 – 3rd Floor Deteriorated Walkway Canopy Façade between North and East Buildings

Photo 71 – 3rd Floor Deteriorated Walkway Canopy Façade between North and West Buildings

Photo 72 – West Building Roof showing Hail Damage (Looking West)

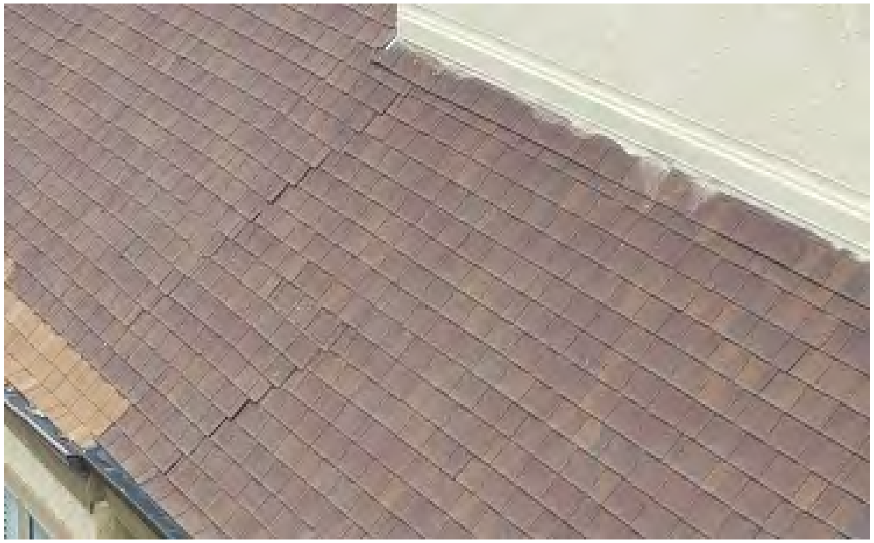


Photo 73 – North Building: Walkway Canopy Roof showing Improper Patching (Looking West)

Photo 74 – East Building: North Stairway Roof showing Hail Damage

Photo 75 – East Building: Northern Roof Expansion Joint Improperly Covered with a Shingle Patch

Photo 76 – East Building Roof showing Deteriorated Vents, Penetrations, and Flashings (Looking South)

Photo 77 – East Building: Northern Deteriorated Expansion Joint at Walkway Canopy Roof

Photo 78 – East Building Southern Roof Expansion Joint Improperly Covered with a Shingle Patch

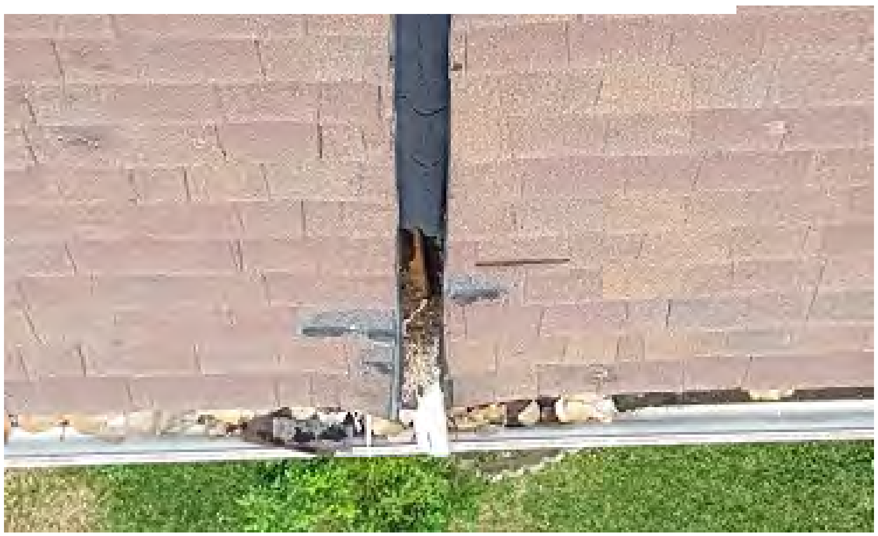


Photo 79 – East Building: Southern Deteriorated Expansion Joint at Walkway Canopy Roof

Photo 80 – East Building: Deteriorated Flashing and Roofing at Vent Penetrations

Photo 81 – South Building Roof showing Deteriorated Vents, Penetrations, and Flashings (Looking West)

Photo 82 – South Building Walkway Canopy Roof showing Hail Damage and deteriorated Ridge Construction (Looking West)

Photo 83 – Walkway Canopy Connector between North and West Buildings showing Deteriorated Conditions

Photo 84 – North Building: Walkway Canopy Roof (Looking East)

Photo 85 – North Building Roof: West End showing Facade Cracks

Photo 86 – West Building Roof showing Hail Damage (Looking North)

Photo 87 – West Building: Southern Stairway Canopy Roof showing hail Damage (Looking East)

Photo 88 – South Building: Walkway Canopy Roof (Looking East)

Photo 89 – West Building showing Deteriorated Northern Roof Expansion Joint

Photo 90 – West Building Southern Roof Expansion Joint Improperly Covered with a Shingle Patch

Photo 91 – West Building: Northern Deteriorated Expansion Joint at Walkway Canopy Roof

Photo 92 – West Building: Southern Deteriorated Expansion Joint at Walkway Canopy Roof

Photo 93 – West Building: Deteriorated Ridge Flashing and Canopy Roof (Looking South)

Photo 94 – Walkway Canopy Connector between North and East Buildings showing Deteriorated Conditions

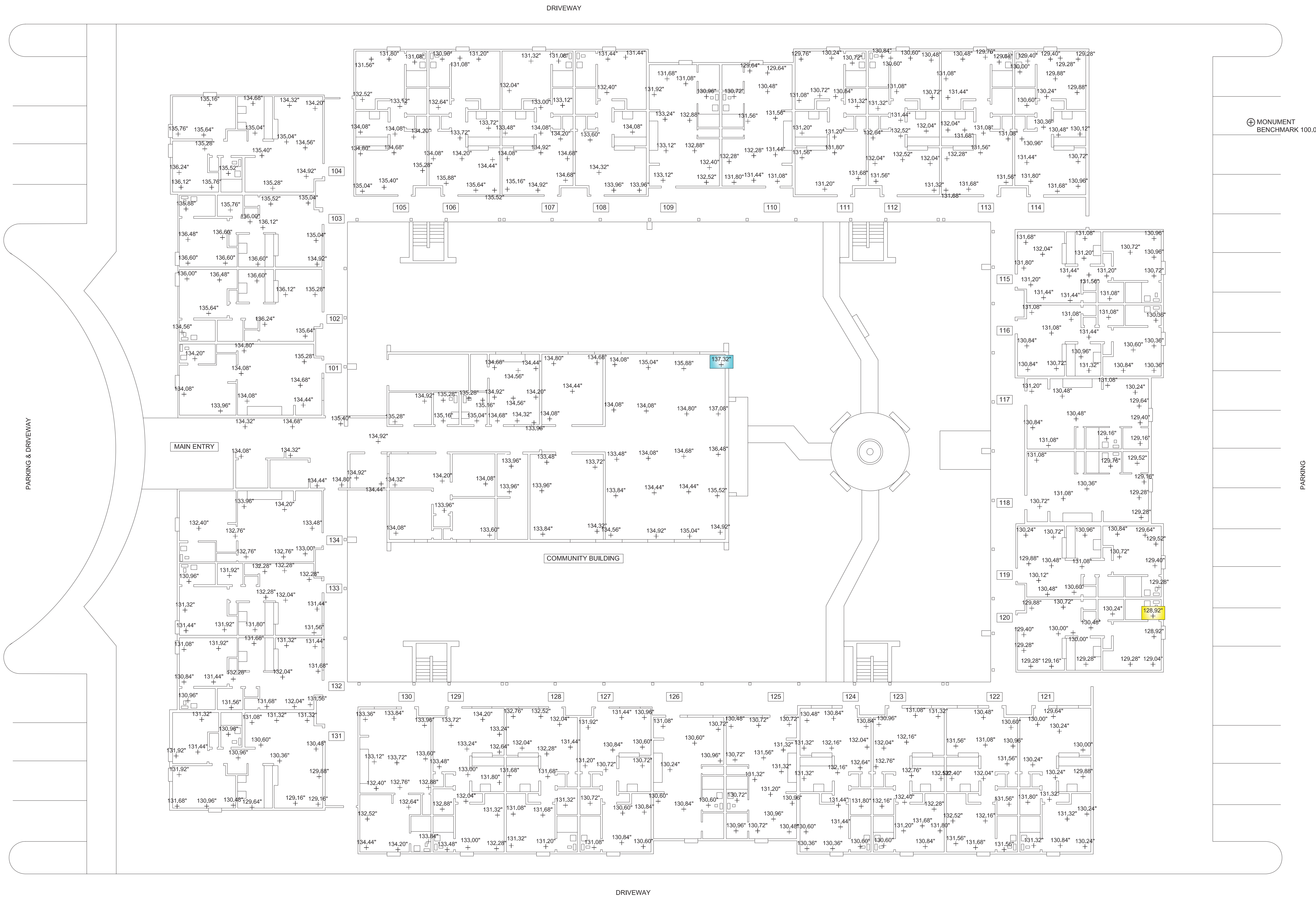
Photo 95 – Community Building Roof (Looking West)

Photo 96 – North Building: East End showing Deteriorated Ridge and Rake Flashing and Facade Cracks (Looking North)


Photo 97 – North Building: Deteriorated Ridge and Rake Flashing

APPENDIX B

Drawing Exhibits



1 FIRST LEVEL - RELATIVE ELEVATION DATA POINTS
SCALE: 3/32" = 1'-0"

TRUE NORTH

LOW ELEVATION

HIGH ELEVATION

RABA KISTNER
Raba Kistner Consultants, Inc.
12821 West Golden Lane
San Antonio, Texas 78249
www.rkci.com
P 210 :: 699 :: 9090
F 210 :: 699 :: 6426
TBPE Firm F-3257

FIRST LEVEL - RELATIVE ELEVATION POINTS

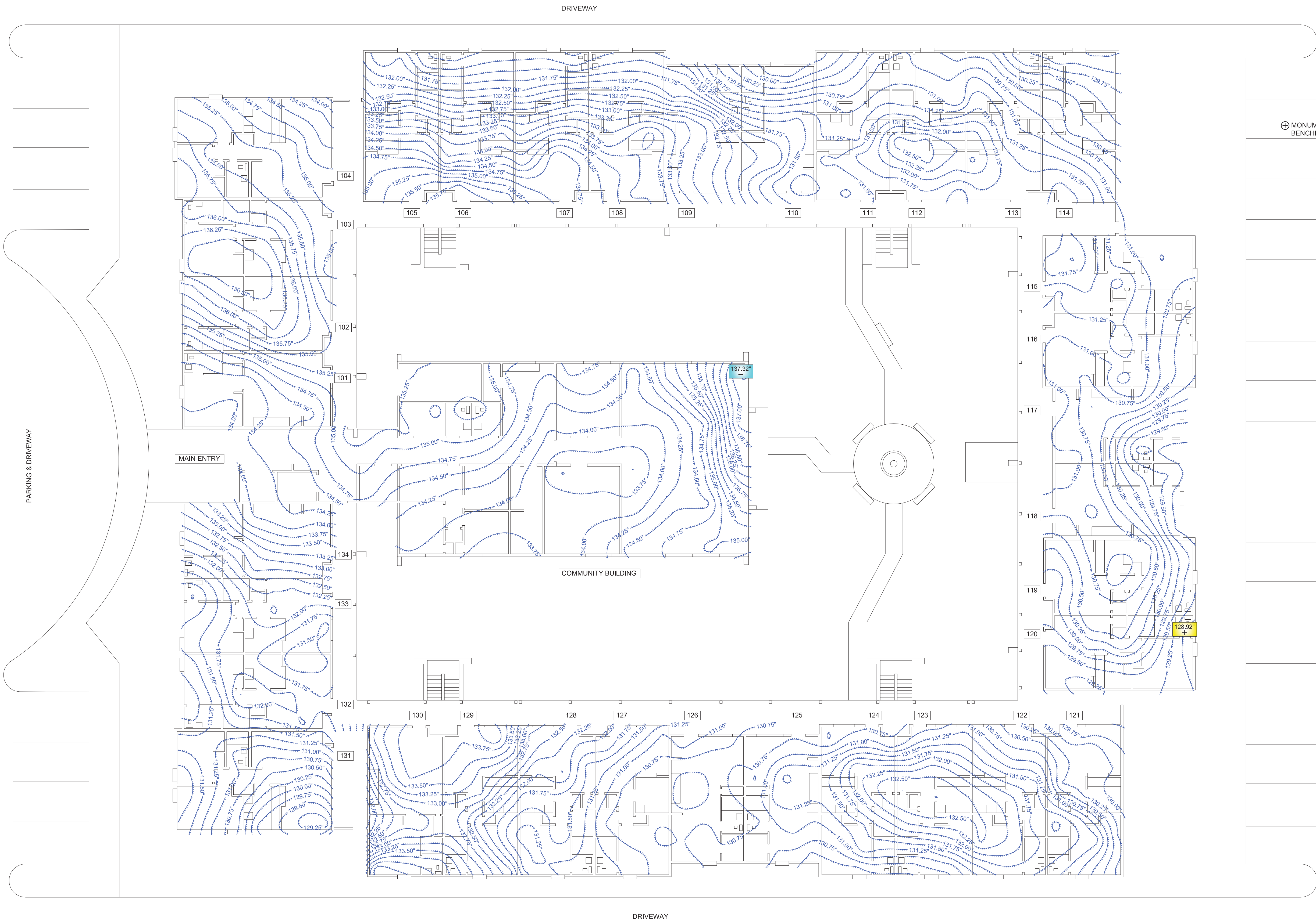
Pecan Hill Apartments
1600 West Lawndale
San Antonio, Texas

REVISIONS:

No.	DATE	DESCRIPTION

PROJECT No.:	ASR16-034-00
ISSUE DATE:	10-07-16
DRAWN BY:	SC
CHECKED BY:	RR
REVIEWED BY:	ESR

SHEET NO.
C1.0



1 FIRST LEVEL - RELATIVE ELEVATION CONTOURS

SCALE: 3/32" = 1'-0"

TRUE NORTH

LOW ELEVATION

HIGH ELEVATION

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FIRST LEVEL - RELATIVE ELEVATION CONTOURS

Pecan Hill Apartments

1600 West Lawndale
San Antonio, Texas

REVISIONS:

No.	DATE	DESCRIPTION

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ISSUE DATE:	10-07-16
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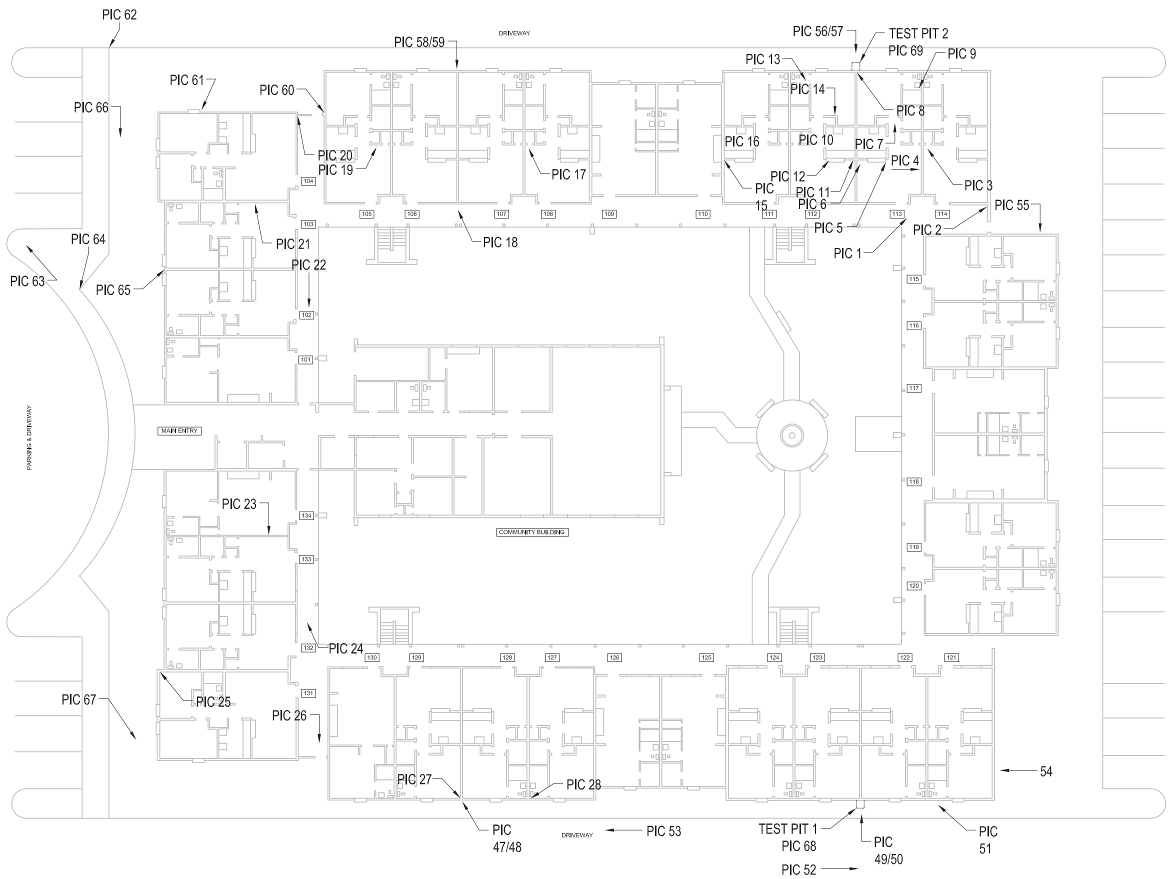
CHECKED BY:	RR
REVIEWED BY:	ESR

SHEET NO.

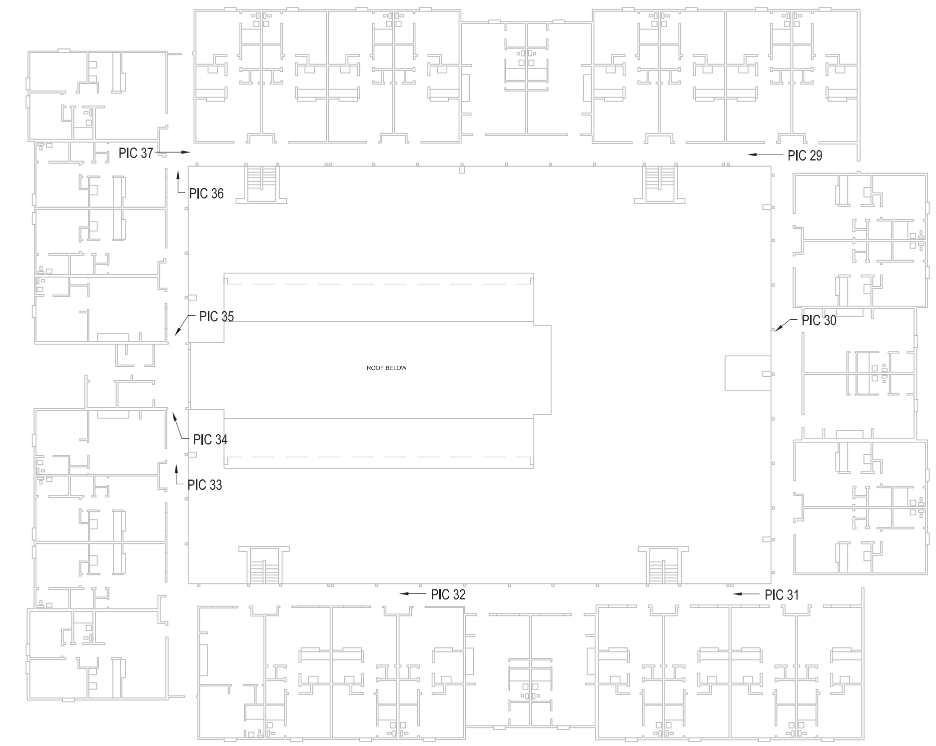
C1.1



1 FIRST LEVEL PHOTO KEY PLAN

SCALE: NTS

TRUE NORTH



2 SECOND LEVEL PHOTO KEY PLAN

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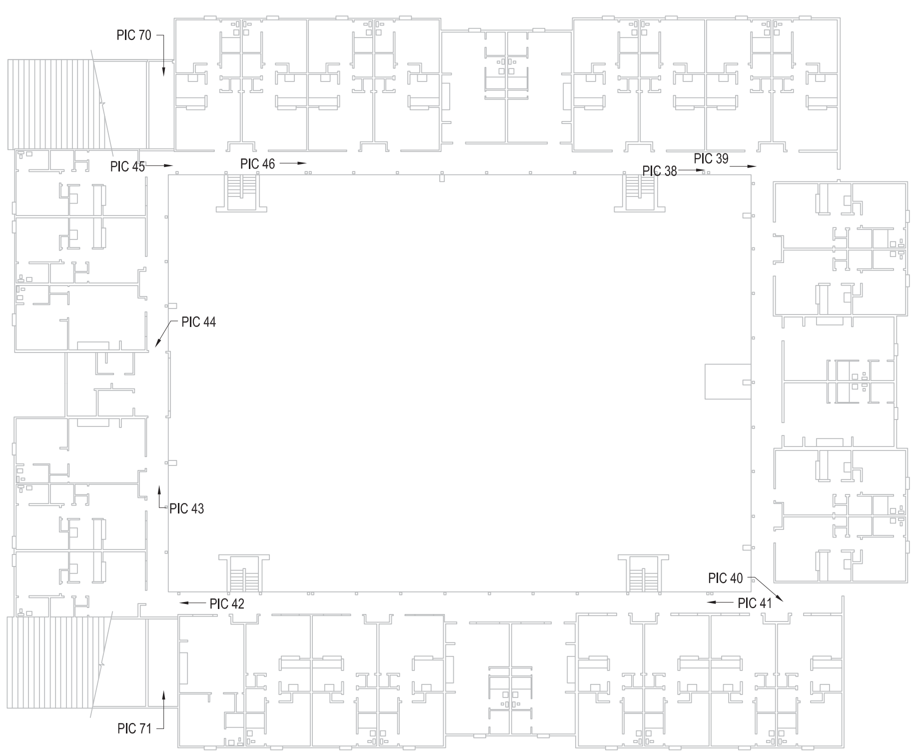

3 THIRD LEVEL PHOTO KEY PLAN

SCALE: NTS

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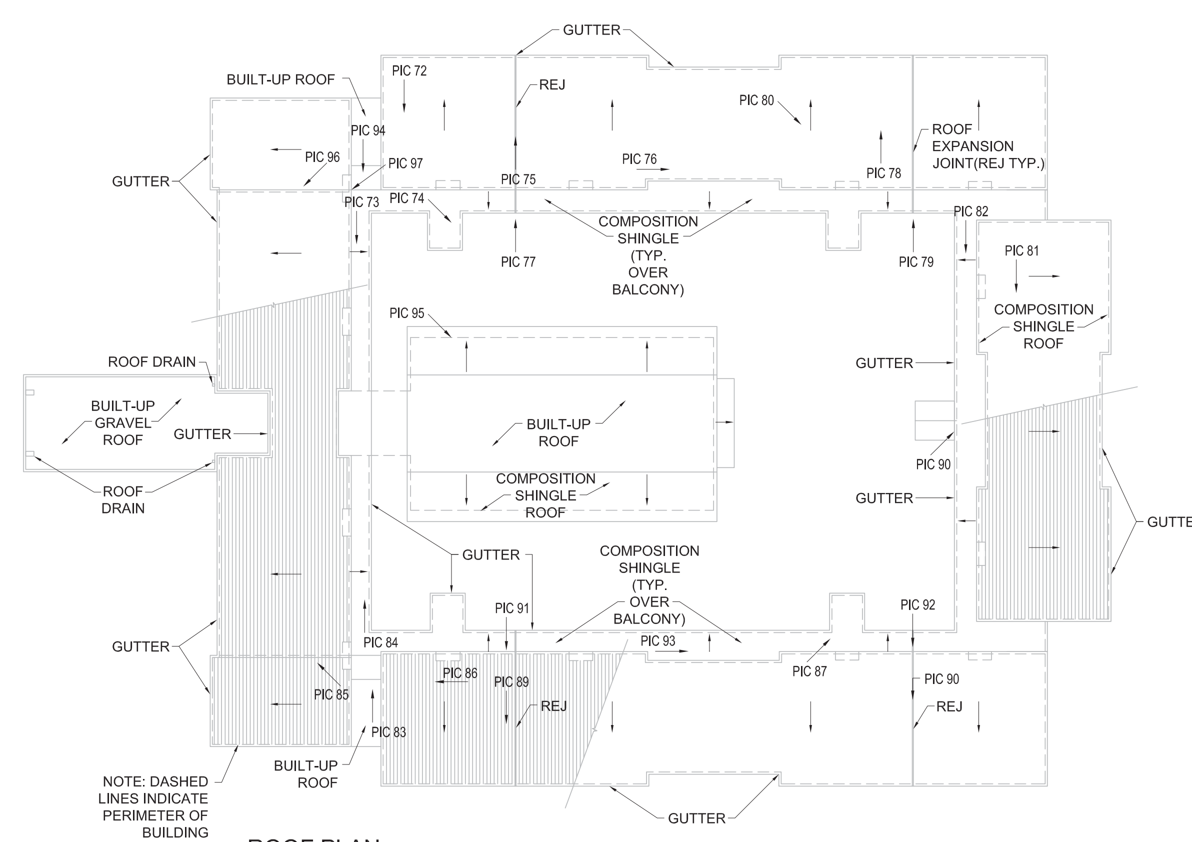

4 ROOF PLAN PHOTO KEY PLAN

SCALE: NTS

TRUE NORTH

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PHOTO KEY PLANS

Pecan Hill Apartments
1600 West Lawndale
San Antonio, Texas

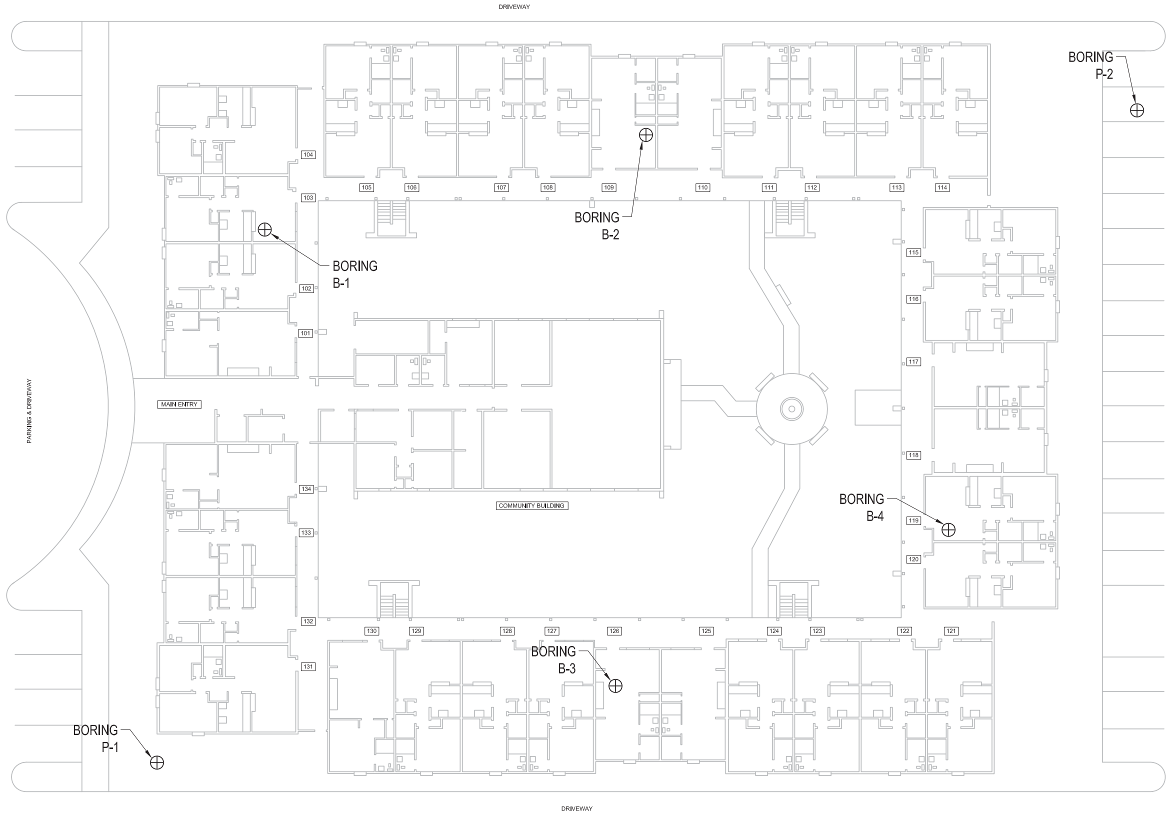
REVISIONS:

No.	DATE	DESCRIPTION

PROJECT No.:	ASR16-034-00
ISSUE DATE:	10-07-16
DRAWN BY:	SC
CHECKED BY:	RR
REVIEWED BY:	ESR

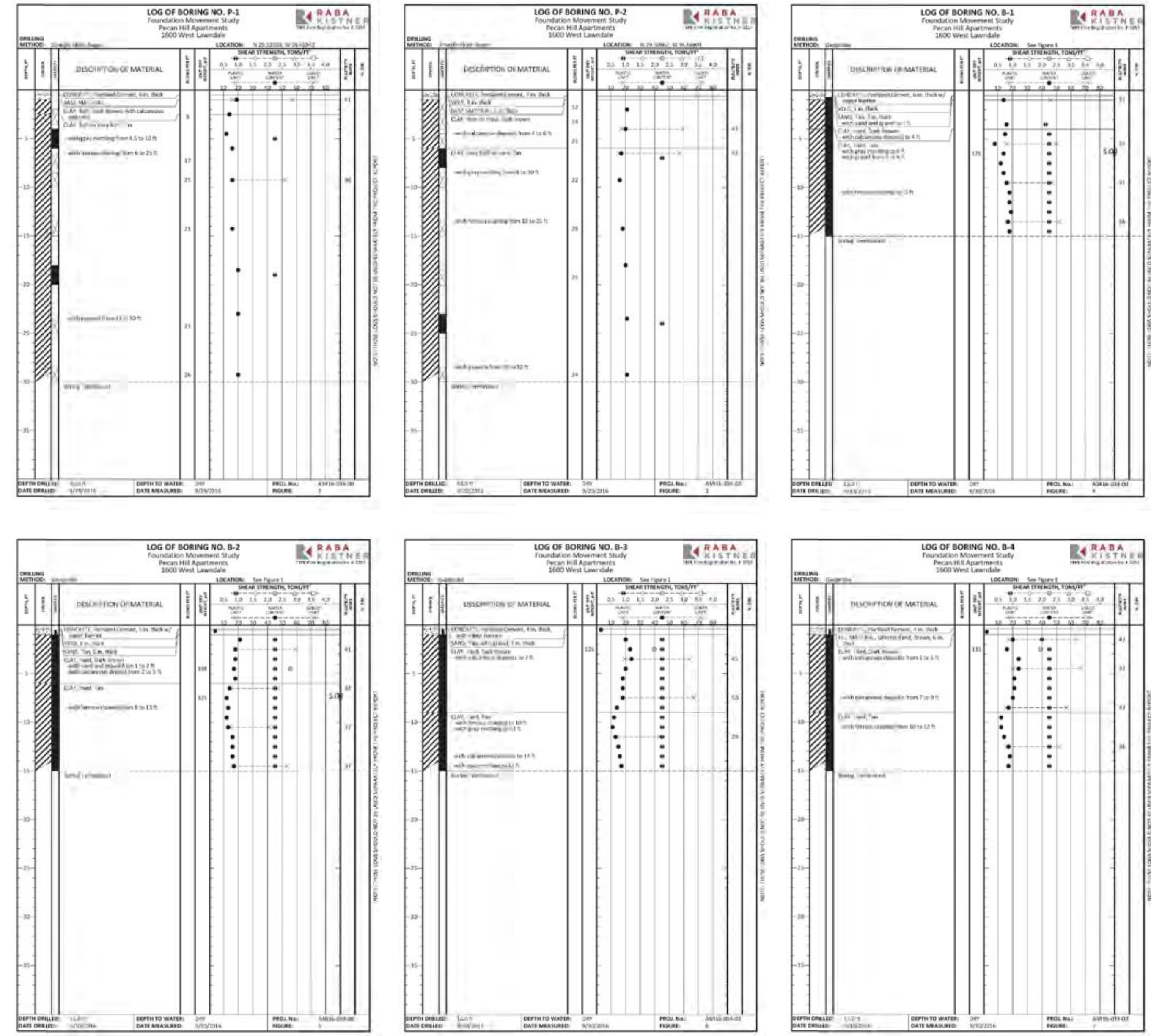
SHEET NO.

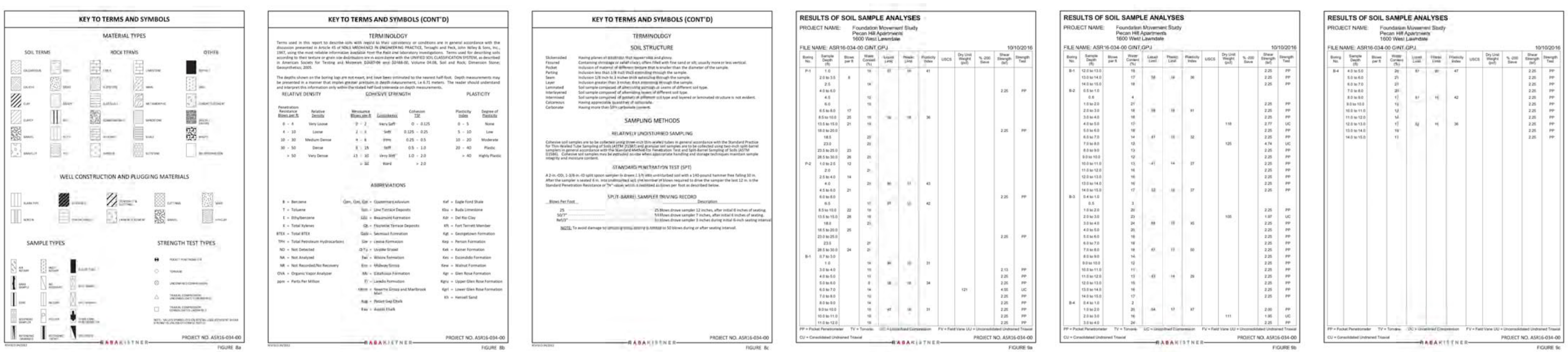
C1.2



FIRST LEVEL
BORING LOCATION PLAN
SCALE: NTS

TRUE
NORTH





FIRST LEVEL
BORING LOCATION LOGS
SCALE: NTS

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F 210 :: 699 :: 6426
TBPE Firm F-3257

BORING LOCATION PLAN & LOGS

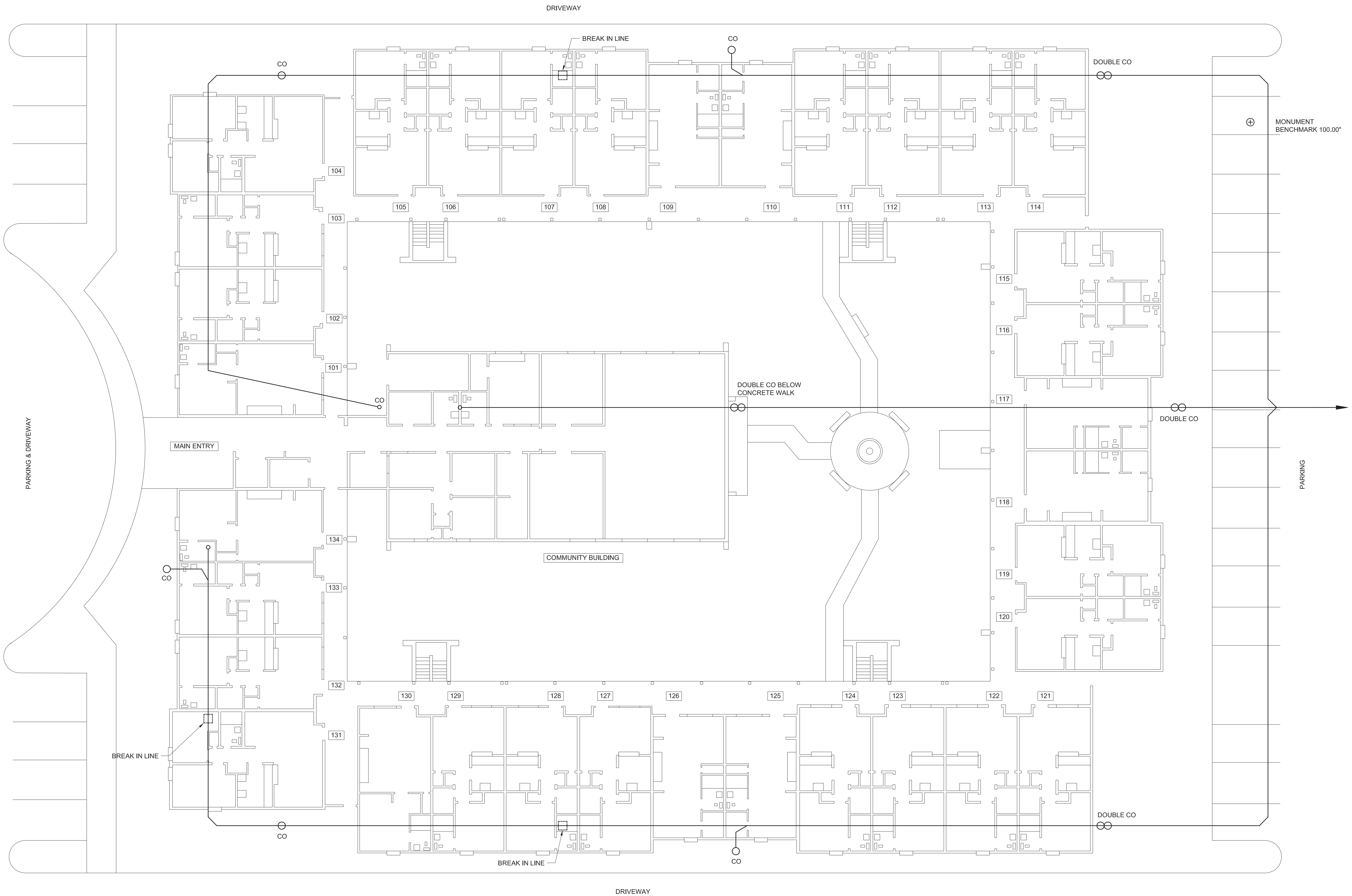
Pecan Hill Apartments
1600 West Lawndale
San Antonio, Texas

REVISIONS:

No.	DATE	DESCRIPTION

PROJECT No.:	ASR16-034-00
ISSUE DATE:	10-07-16
DRAWN BY:	SC
CHECKED BY:	RR
REVIEWED BY:	ESR

SHEET NO.
C1.3



NOTE: SANITARY SEWER DEPICTS AS-BUILT AND EXISTING CONDITIONS AS DETERMINED FROM CAMERA OBSERVATIONS CONDUCTED BY BRYCO PLUMBING CO. INC. ON DECEMBER 1, 2016.

1 FIRST LEVEL - UNDERGROUND SANITARY SEWER
SCALE: 3/32" = 1'-0"

TRUE NORTH

RABA KISTNER

Raba Kistner Consultants, Inc.

12821 West Golden Lane
San Antonio, Texas 78249
www.rkci.com
P 210 :: 699 :: 9090
F 210 :: 699 :: 6426
TBPE Firm F-3257

FIRST LEVEL - UNDERGROUND SANITARY SEWER

Pecan Hill Apartments
1600 West Lawndale
San Antonio, Texas

REVISIONS:

No.	DATE	DESCRIPTION

PROJECT No.:	ASR16-034-00
ISSUE DATE:	10-07-16
DRAWN BY:	SC
CHECKED BY:	RR
REVIEWED BY:	ESR

SHEET NO.
C1.4

APPENDIX C

Plumbing Leak Test Report

Bryco Plumbing Company, Inc.
14117 Toepperwein
San Antonio, TX 78233

Professional Plumbing Services
Licensed, Bonded, Insured
655-2552 (Fax 655-2514)

December 7, 2016

Raba Kistner Consultants
12821 W. Golden Lane
San Antonio, Texas 78249

To: Robert Raffle
Re: Pecan Hill
1600 W. Lawndale
San Antonio, TX 78209

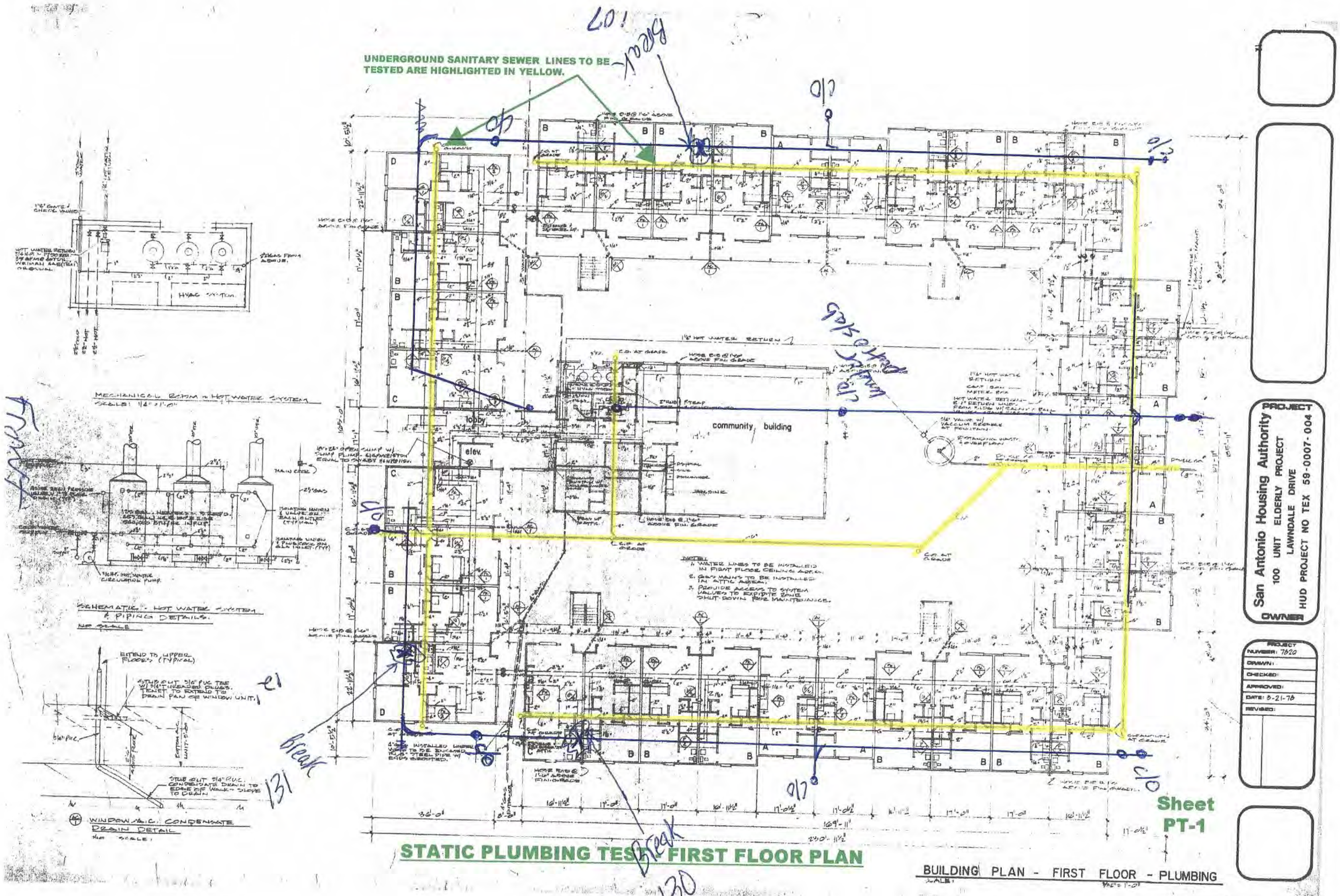
Bryco Plumbing Co conducted a visual inspection of the drain lines under the buildings at the above address. There were three visible breaks found under the buildings. The first break was found under unit 107 under the shower drain. The second break was found under unit 130 under the shower drain. The third leak was found under unit 131 below the master closet on the main drain.
Please note: The drain lines are PVC pipe under the slab.

Please feel free to contact me with any questions you may have regarding the work that was done.

Thank you,

Shawn Roberts

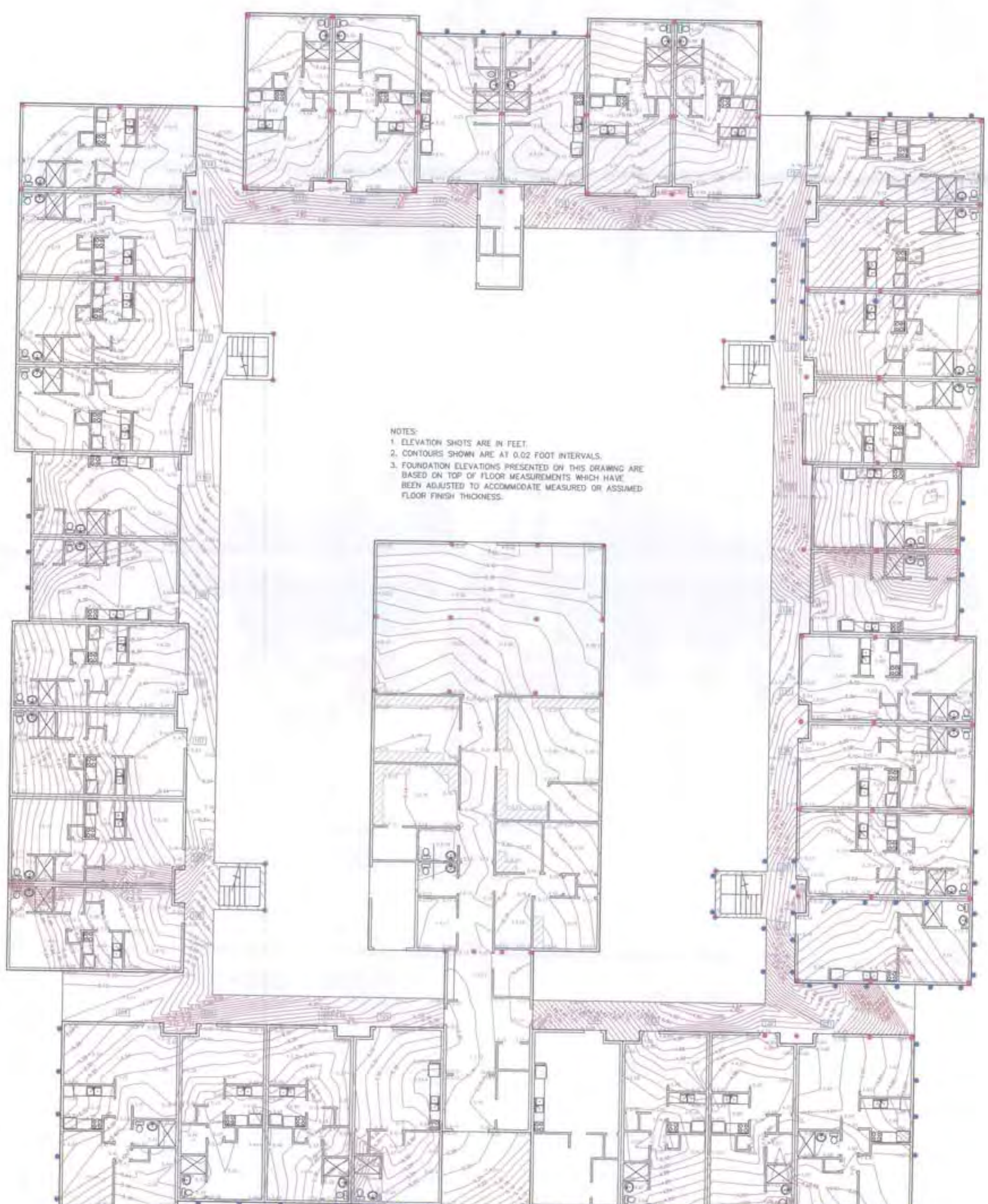
SAR/lbn



UNDERGROUND SANITARY SEWER LINES TO BE TESTED ARE HIGHLIGHTED IN YELLOW.
STATIC PLUMBING TEST - FIRST FLOOR PLAN
BUILDING PLAN - FIRST FLOOR - PLUMBING
Sheet PT-1
community building
lobby
elev.
MECHANICAL ROOM & HOT WATER SYSTEM
SCHEMATIC - HOT WATER SYSTEM & PIPING DETAILS.
WINDOW A.C. CONDENSATE DRAIN DETAIL
PROJECT
San Antonio Housing Authority
100 UNIT ELDERLY PROJECT
LAWNDALE DRIVE
HUD PROJECT NO TEX 59-0007-004
OWNER
PROJECT NUMBER: 7820
DRAWN:
CHECKED:
APPROVED:
DATE: 5-21-76
REVISED:
Break
107
Break
131
Break
130
c/o

APPENDIX D

Foundation Elevations 2011



▭ – DENOTES STORAGE SPACE

● – DENOTES CUTLER GALLAWAY PIER LOCATIONS

● – DENOTES MAVERICK ENGINEERING PIER LOCATIONS

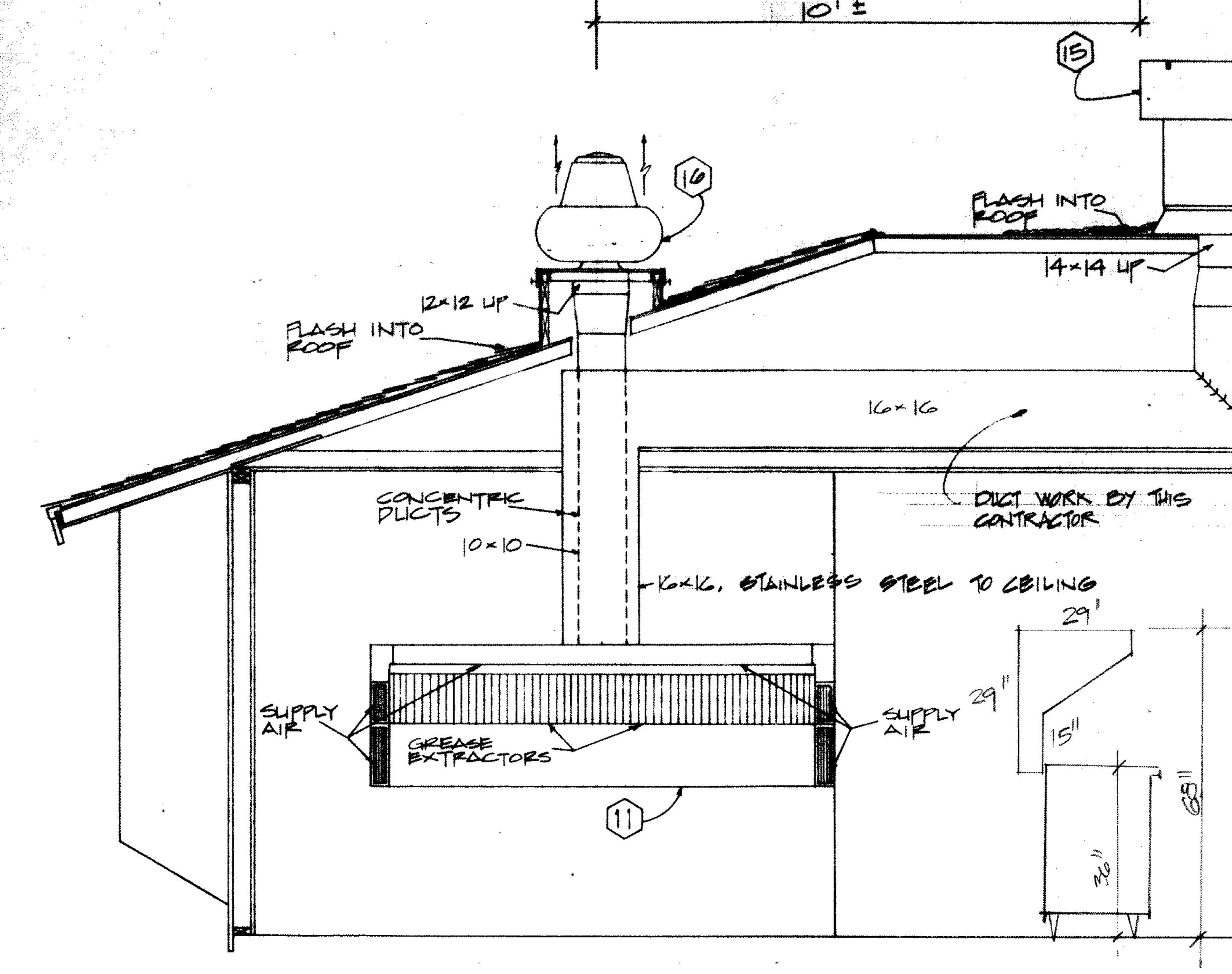
FOUNDATION ELEVATIONS

SCALE : 1" = 10'

AccuTech Consultants, LLC
STRUCTURAL & FORENSIC ENGINEERING

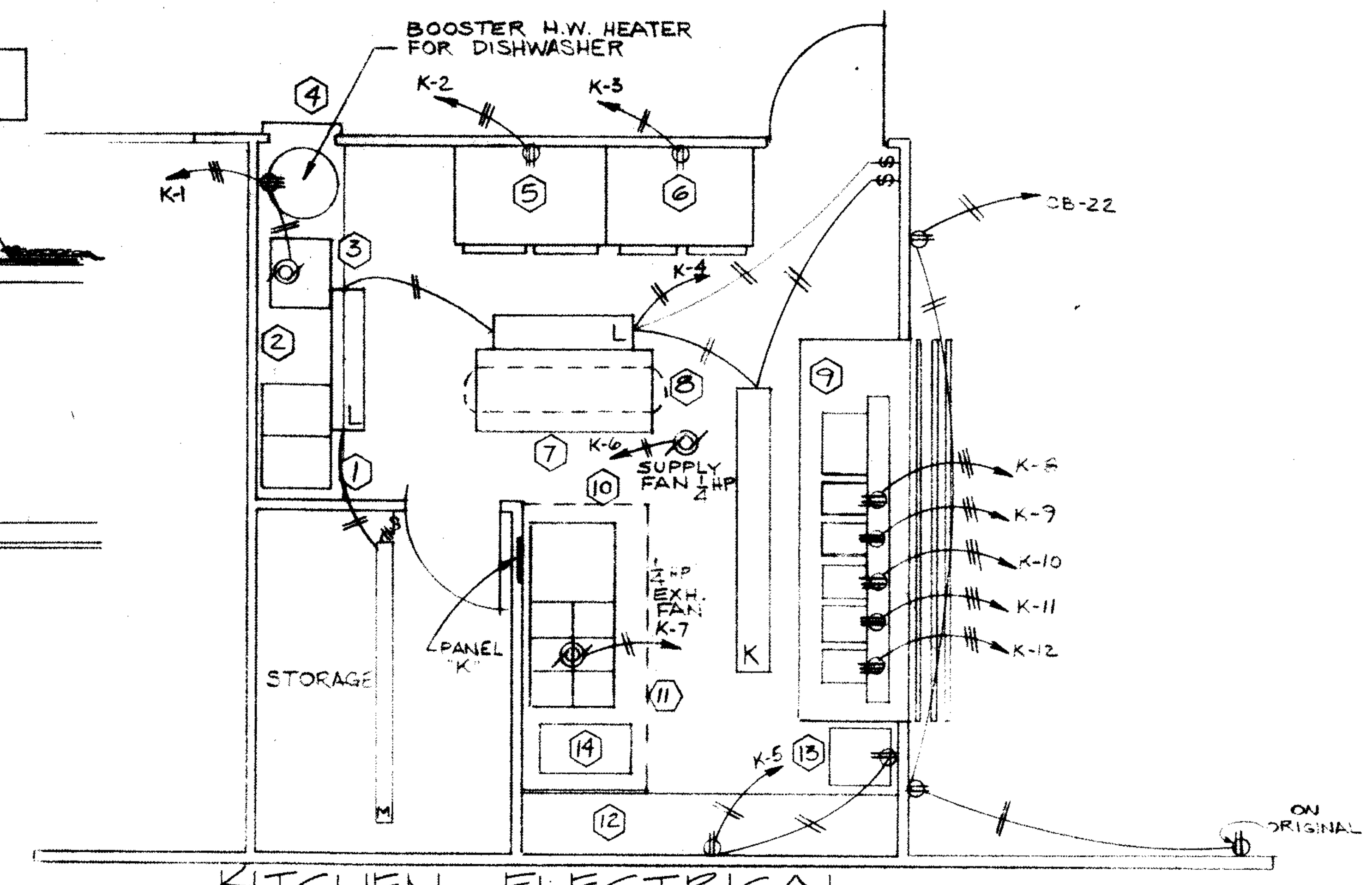
SUBJECT: FOUNDATION ELEVATIONS
PROJECT: PECAN HILLS APARTMENTS
BY: DMS PROJECT No.: VIC005-F
CHECK: GVR DATE: 08/11/11

SHEET 4 OF APPENDIX B



SECTION- KITCHEN EXHAUST & SUPPLY

SCALE: 1/2" = 1'-0"



KITCHEN - ELECTRICAL

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

NOTES:

1. SEE PAGE 33 FOR ELECTRICAL SYMBOLS.
2. SEE PAGE 34 FOR LIGHT FIXTURE SCHEDULE AND COMMUNITY BLDG. FLOOR PLAN.
3. CHANGE DISTRIBUTION SCHEDULE PAGE 33 AS SHOWN BELOW.

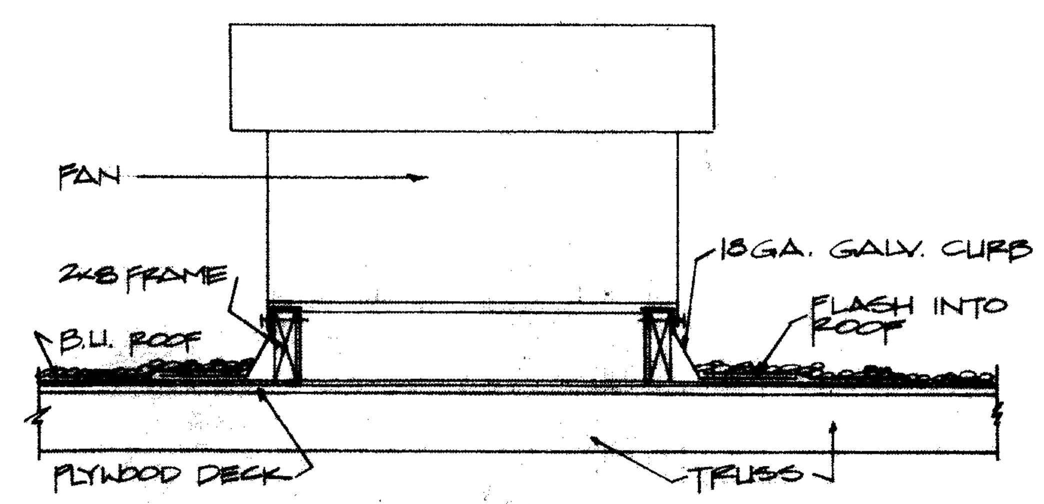
PANEL	MAIN SOURCE	MLO	FEEDS	C/B 500/3P	WIRE	C/B 400/3P	WIRE	C/B 300/3P	WIRE	C/B 225/3P	WIRE	C/B 30/2P	WIRE	C/B 20/2P	WIRE
MDP	TRANS.	1400A	DP1,2,3,4,5 CB	2	2-500M	1	2-350M	2	500M	1	350M				
DP-CB	MDP	400A	L1, K	125/3P 1	2/0	100/3P 1	1/0	60/2P 3	6	50/2P 1	6	1	10	26	12
K	DP-CB	125A	—							50/2P 1	6	20/2P 5	12	8	12

(15) PACKAGED AIR SUPPLY UNIT - BRUNDAGE AS710, 990 CFM, 1/4 H.P., OR EQUAL

(16) TOP DISCHARGE EXHAUST - GREENHECK UCBE-10-4, 1/4 H.P., 1160 CFM, OR EQUAL

(11) EXHAUST HOOD - DUO-AIRE LPB-8, OR EQUAL

NOTE: ALL EQUIP. TO BE FURNISHED BY OTHERS, INSTALLED BY THIS CONTRACTOR



FAN CURB

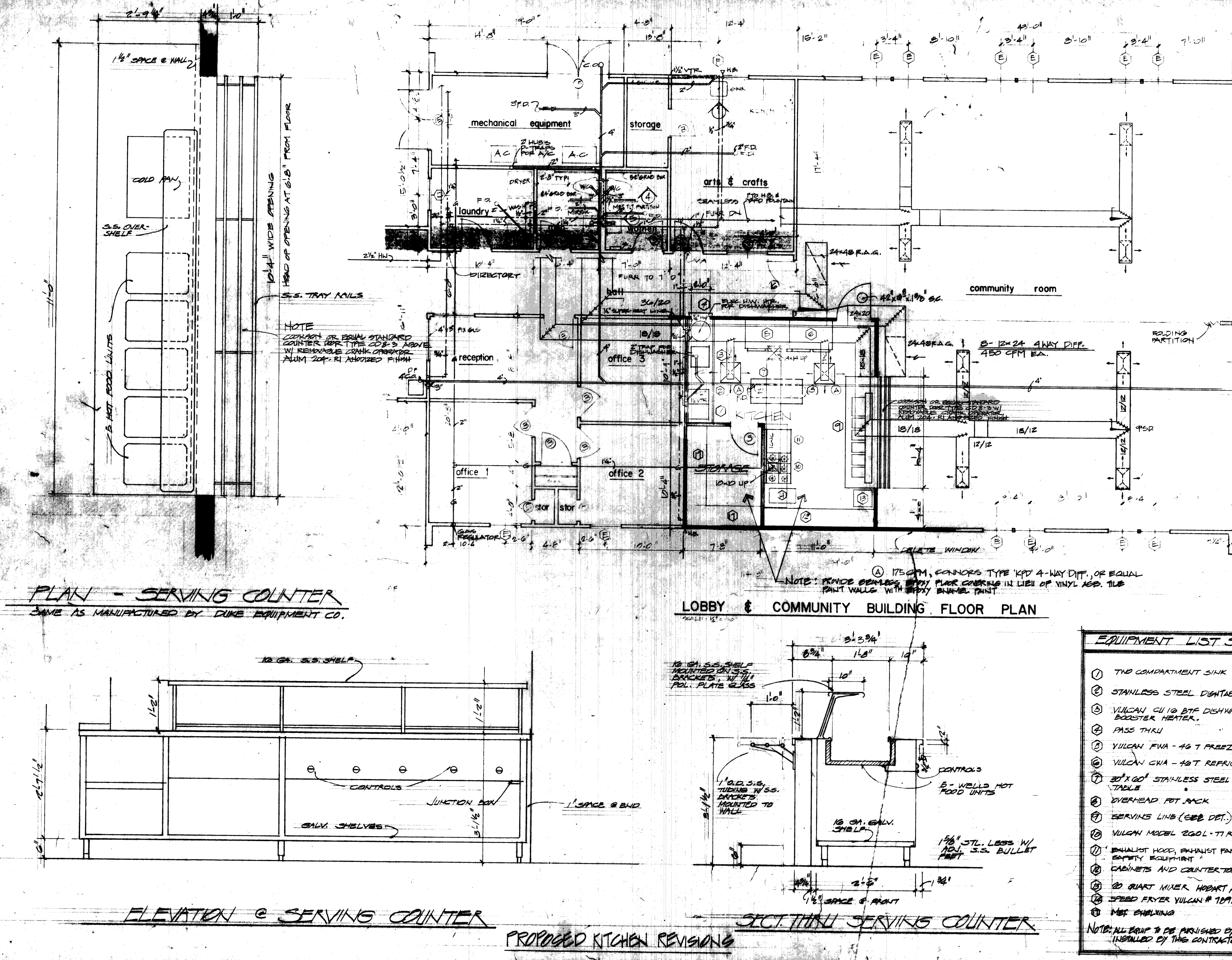
SCALE: NONE

San Antonio Housing Authority
100 UNIT ELDERLY PROJECT
LAWNDALE DRIVE
HUD PROJECT NO TEX 59-0007-004

ralph c. bender & assoc. inc.
environmental planning • urban design • architecture
8026 vantage drive
san antonio
phone: 512-342-3291
texas, 78230

REVISIONS		
NO.	DATE	BY
1	7-27-78	JDS
2		
3		
4		
5		

DRAWN BY	SCALE	MATERIAL
CHK'D	DATE 6-1-78	DRAWING NO.
TRACED	APP'D	2 OF 2



EQUIPMENT LIST SCHED.

1. TWO COMPARTMENT SINK
2. STAINLESS STEEL DISHTABLE
3. VULCAN CU 16 BTF DISHWASHER AND BOOSTER HEATER.
4. PASS THRU
5. VULCAN FWA - 46 T FREEZER
6. VULCAN CWA - 46 T REFRIGERATOR
7. 30" X 60" STAINLESS STEEL WORK TABLE
8. OVERHEAD POT RACK
9. SERVING LINE (SEE DET.)
10. VULCAN MODEL 260L - 77 R RANGE
11. EXHAUST HOOD, EXHAUST FAN, FIRE SAFETY EQUIPMENT
12. CABINETS AND COUNTER TOP
13. 20 QUART MIXER HOBART AS-200T
14. SPEED FRYER VULCAN # 18916
15. MET. SHELVING

NOTE: ALL EQUIP TO BE FURNISHED BY OTHERS, INSTALLED BY THIS CONTRACTOR

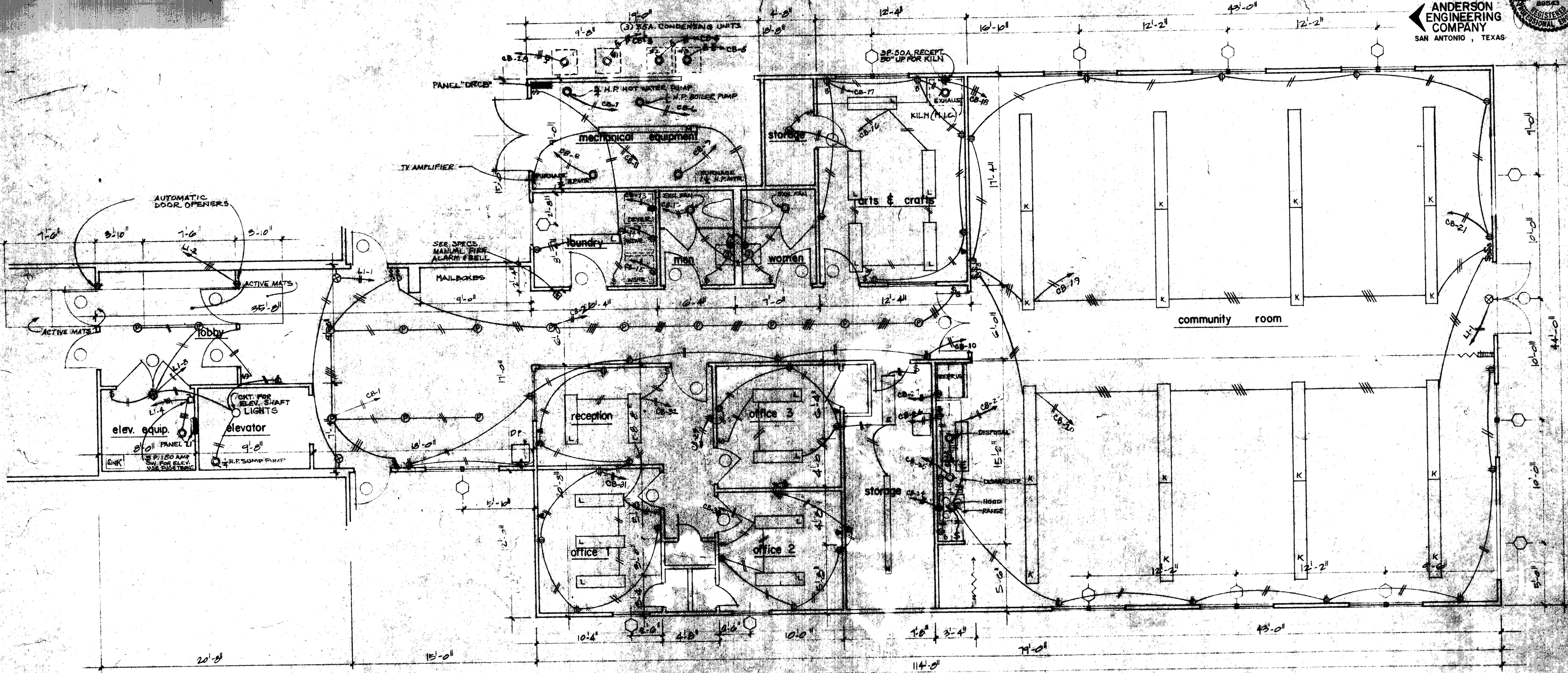
ralph c. bender & assoc. inc.
environmental planning • urban design • architecture
8026 vantage drive, san antonio texas 78230
phone: 512 342 3291

PROJECT
San Antonio Housing Authority
100 UNIT ELDERLY PROJECT
LAWNDALE DRIVE
HUD PROJECT NO TEX 59-0007-004
OWNER

PROJECT NUMBER: 7820
DRAWN:
CHECKED:
APPROVED:
DATE: 6-1-78
REVISED:

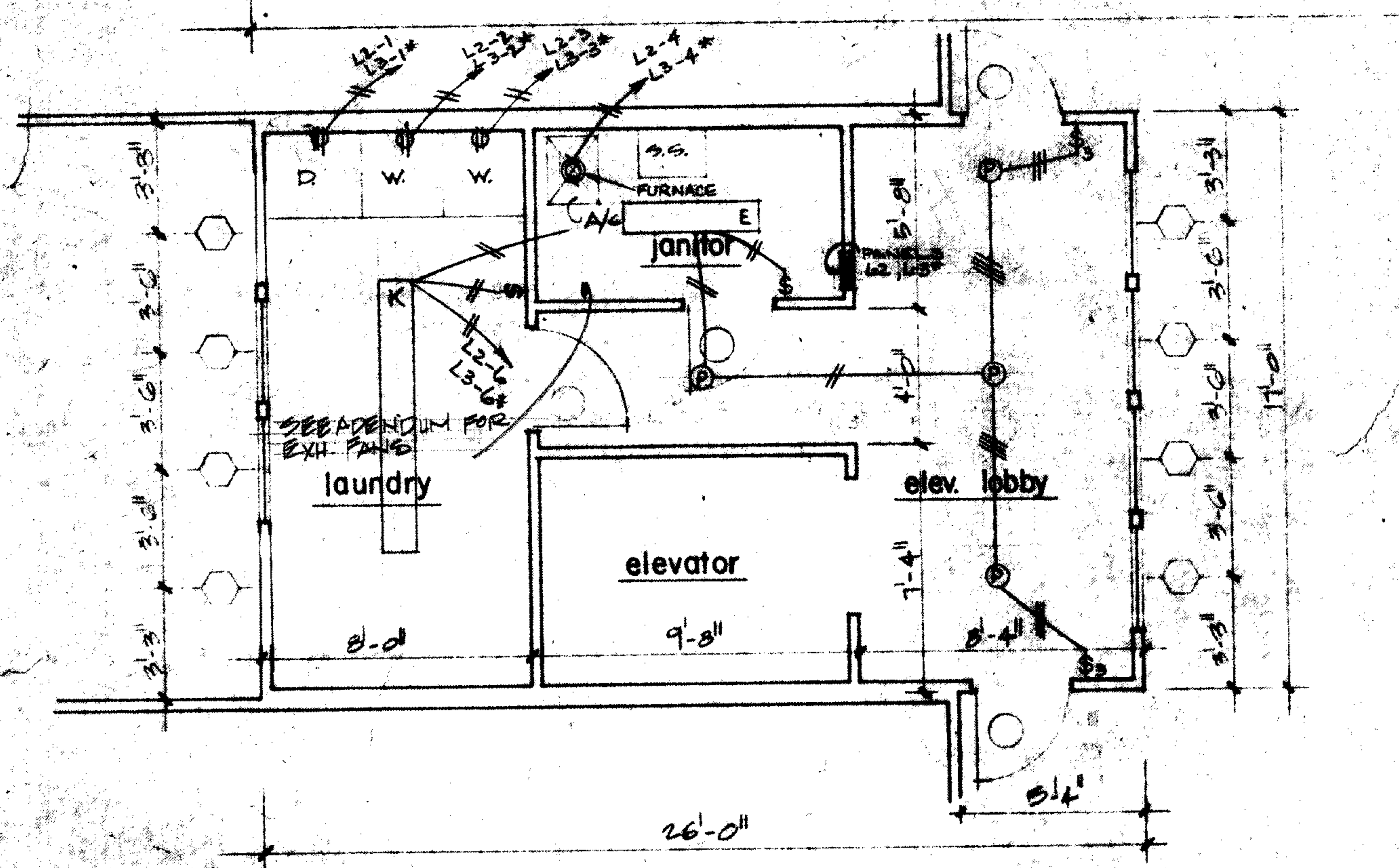
SHEET 1 OF 2

ANDERSON ENGINEERING COMPANY
SAN ANTONIO, TEXAS



LOBBY & COMMUNITY BUILDING FLOOR PLAN - ELECTRICAL

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



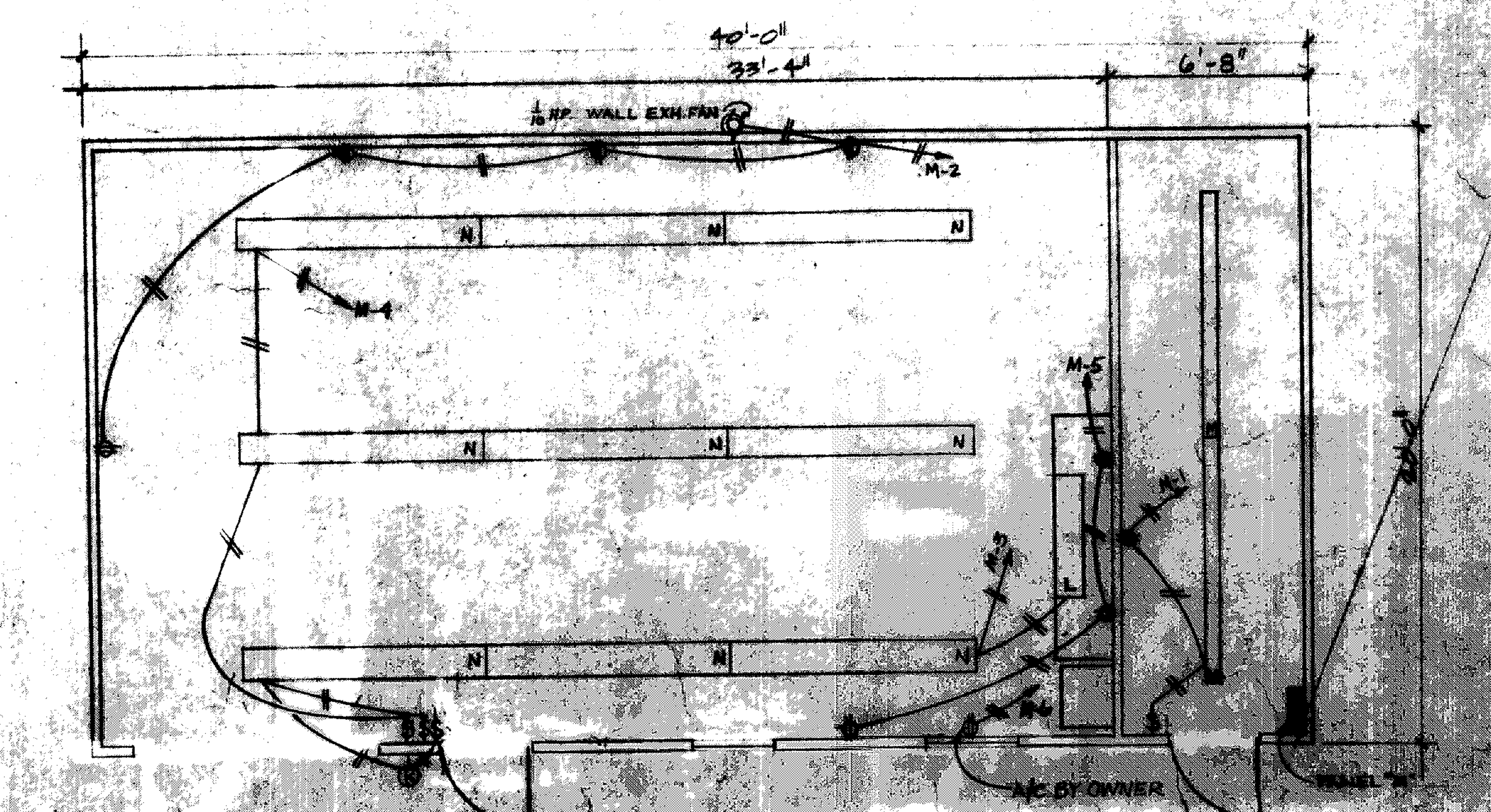
SECOND & THIRD* FLOOR ELEVATOR LOBBY PLAN ELECTRICAL

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

LIGHT FIXTURE SCHEDULE

TYPE	DESCRIPTION	LAMP
A	SOUTHWEST #17015 BEDROOM WALL BRACKET	2-75 W.I.F.
B	SOUTHWEST #14301 DINING & LIVING RM. WALL BRACKET	1-100 W.I.F.
C	SOUTHWEST #15008 8" KITCHEN SURFACE MTD. DRUM	2-60 W.I.F.
D	CONNECT LIGHT ON MEDICINE CABINET	AS REQ'D.
E	LITHONIA #LB-140A SURFACE FLUORESCENT	2-40W. F/S
F	PERFECLITE #CP30-20 SURFACE VANDAL-PROOF DRUM	2-100W.I.F.
G	STEBER #S-5002 TWIN FLOODS MTD. APPROX. 15' ABOVE FIN. GRADE	2-150W. PAR 38
H	NUTONE #9410 RECESSED HEAT LAMP W/ TIMER #V565 (INFRARED)	1-250W. R-40
J	SOUTHWEST #17212 TOILET WALL BRACKET	2-60W. I.F.
K	LITHONIA #8TLB-240A SURFACE FLUORESCENT	4-40W. F/S
L	LITHONIA #LB-440A SURFACE FLUORESCENT	4-40W. F/S
M	LITHONIA #C140 BARE STRIP SURFACE FLUORESCENT	2-40W. F/S
N	LITHONIA #8TC-240 BARE STRIP SURFACE FLUORESCENT	4-40W. F/S
P	SOUTHWEST #22400 LOBBY CEILING INCANDESCENT	1-100 W.I.F.
R	SOUTHWEST #19016 WALL BRACKET INCANDESCENT	1-75 W.I.F.
S★	MC GRAW EDISON #TS-1214 120V. PARKING FLOOD	1-250 W. M.V.
T	DECOR-LITE (CHLORIDE SYSTEMS LTD) #SPU-10-120 EMERG. EXIT	(FURN. W/ FIXT.)
W	ALABAX #AL-3140 PORCELAIN LAMPHOLDER	1-100 W.I.F.
Y	MARKSTONE #W100-95 RECESSED INCANDESCENT	1-150 W. I.F.

NOTE: ALL FIXTURES FURNISHED BY OWNER, INSTALLED BY ELECTRICAL CONTRACTOR.
★ MOUNT ON 25'-2½" Ø GALVANIZED PIPE PAINTED TO MATCH FIXTURE. PIPE TO BE ENCASED IN CONCRETE 36" DEEP BY ELECTRICAL CONTRACTOR.



MAINTENANCE BUILDING - ELECTRICAL

ralph c. bender & assoc. inc
environmental planning • urban design • architecture
825 vantage drive san antonio texas 78230
phone: 512 342-3251

San Antonio Housing Authority
HUD PROJECT NO.
OWNER

34 OF 34

APARTMENT PANEL SCHEDULE													
QUANTITY	TYPE	SIZE	VOLTAGE	TYPE	C/B		C/B		C/B		C/B		FEEDER-(USE THW ALUMINUM) S.E.U. SERVICE
					125/3P	WIRE▲	50/2P	WIRE▲	30/2P	WIRE▲	20/1P	WIRE▲	
18	A	100A. M.L.O.	120/208 V. 1Φ	FLUSH			1	#6	1	#10	8	#12	3 #2
69	B	100A. M.L.O.	120/208 V. 1Φ	FLUSH			1	#6	1	#10	8	#12	3 #2
9	C	100A. M.L.O.	120/208 V. 1Φ	FLUSH			1	#6	1	#10	8	#12	3 #2
4	D	100A. M.L.O.	120/208 V. 1Φ	FLUSH			1	#6	1	#10	8	#12	3 #2
1	M	125A. M.L.O.	120/208 V. 3Φ	SURFACE					1 *	#10	7	#12	4 #2, 1-#6 G. 1¼" PVC
1	L1	125A. M.L.O.	120/208 V. 3Φ	FLUSH	1	#2	2	#4			5	#12	3 #2
1	L2	70 A. M.L.O.	120/208 V. 1Φ	FLUSH							7	#12	3 #2
1	L3	70 A. M.L.O.	120/208 V. 1Φ	FLUSH					1	#10	10	#12	3 #4

▲ COPPER

DISTRIBUTION PANEL SCHEDULE														
PANEL	MAIN SOURCE	MLO MIN.	FEEDS	C/B		C/B		C/B		C/B		C/B		FEEDER - (USE THW ALUMINUM) PVC SERVICE UNDERGROUND
				500/3P	WIRE	400/3P	WIRE	225/3P	WIRE	100/2P	WIRE	20/1P	WIRE	
MDP	TRANSF.	1200A.	DP1,2,3,4,5, CB	2	2-#500M	3	#500M	1	#350M					1200 AMP 120/208 V. 3Φ 4-WIRE
DP-1 ★	MDP	500	DP-1A, M 3A,12B APTS.			1	#300M	100/3P 1	#2	15	#2	6	#12	3-#500MCM, 1-#350MCM NEUT., #1/0G., 2-3½" PVC.
DP-1A ★	DP-1	400	6A,12B APTS							18	#2	2	#12	3 #250MCM, 1-#3/0 NEUT, #1/0G. 2-2½" C.
DP-2 ★	MDP	500	DP-2A,3A,12B					1	#300M	15	#2	4	#12	3 #500MCM, 1-#350 MCM N., 1-#1/0 G. 2-3½" C.
DP-2A ★	DP-2	225	6B,3C,2D							11	#2	4	#12	3 #350 MCM, 1-#250 MCM NEUT., 1-#2 G.
DP-3 ★	MDP	225	6B,3C,2D							11	#2	4	#12	3 #350 MCM, 1-#250 MCM NEUT., 1-#2 G.
DP-4 ★	MDP	400	3A,9B,3C							15	#2	4	#12	3 #500 MCM, 1-#350 MCM NEUT., 1-#1/0G.
DP-5 ★	MDP	400	3A,12B							15	#2	4	#12	3 #500 MCM, 1-#350 MCM NEUT., 1-#1/0 G.
DP-CB ★	MDP	400	L1	125/3P 1	#2/0	60/2P 3	#4	50/2P 1	#6	30/2P 1	#10	29	#12	3 #500 MCM, 1-#350 MCM NEUT., 1-#1/0 G.
L1	DP-CB	125	L2, L3	SEE	ABOVE									

★ PANELS DP-1, 2, 3, 4, 5, CB, 1A, 2A SHALL HAVE CIRCUIT BREAKERS AS SCHEDULED AND ON LOAD SIDE OF APARTMENT BREAKERS THEY SHALL HAVE 100 A. METER SOCKETS FOR INSTALLATION OF WATTHOUR METERS FOR CONSUMPTION CHECKING BY OWNER.

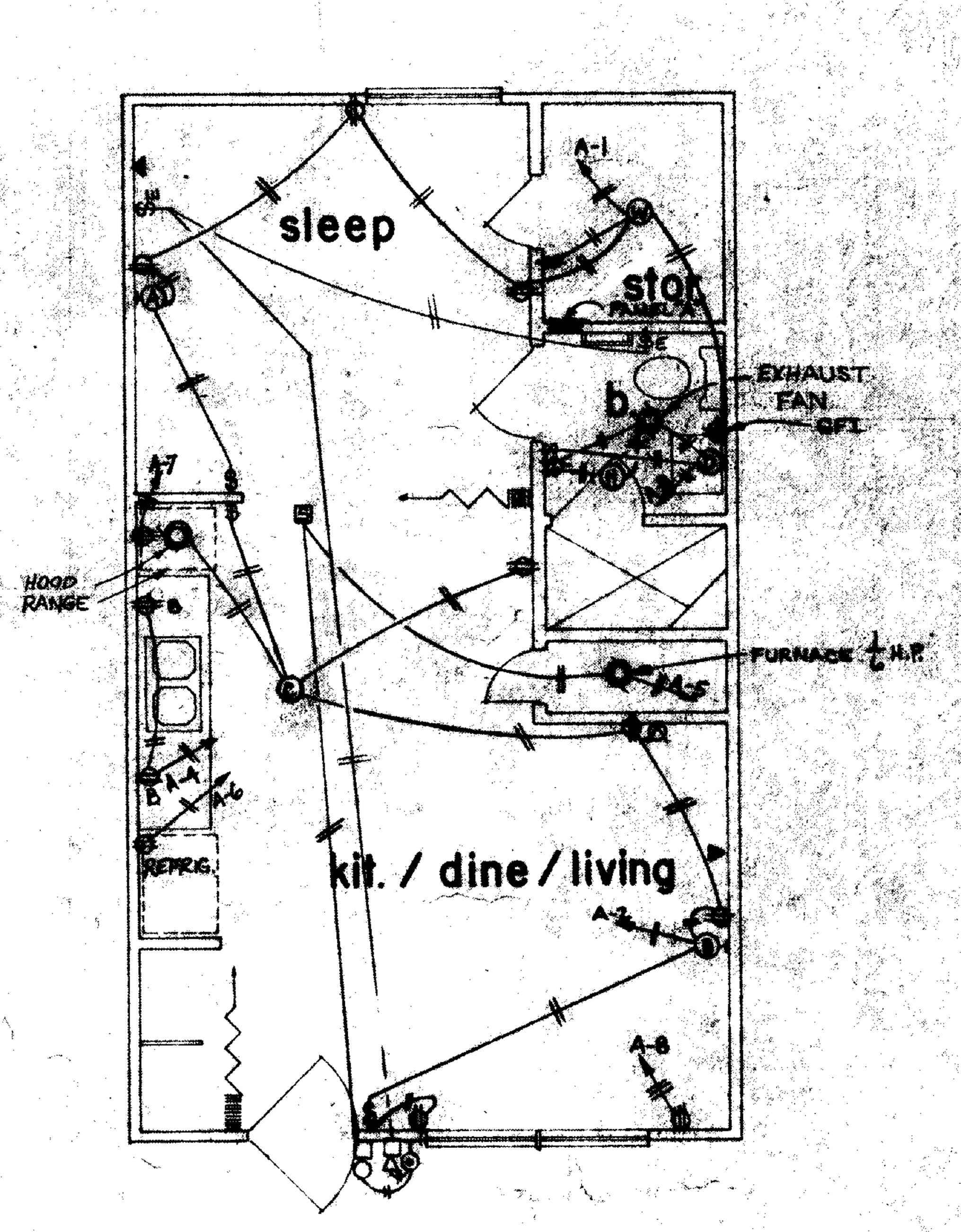
ELECTRICAL SYMBOLS

- ELECTRIC CIRCUIT DIAGRAM. NO. OF WIRES INDICATED
- CEILING LIGHT OUTLET LETTER DENOTES TYPE
- WALL LIGHT OUTLET LETTER DENOTES TYPE
- MOTOR OUTLET
- PHOTO-CELL STONCO # P50-AS
- DISCONNECT SWITCH
- TELEPHONE OUTLET
- WALL SWITCH
- EMERGENCY SWITCH SEE SPECS.
- DUPLEX RECEPTACLE - 27" A.F.F. TYPICAL
- DUPLEX RECEPTACLE - ABOVE CABINET OR COUNTER
- EMERGENCY & SMOKE DETECTOR WARNING LIGHTS
- SMOKE DETECTOR - MOUNTED IN CEILING W/AUDIBLE ALARM
- T.V. OUTLET
- 3-WAY SWITCH
- RANGE RECEPTACLE - 2P-50A.
- TIMER SWITCH
- HORN CONNECTED TO EMERGENCY SIGNAL SYSTEM
- SMOKE DETECTOR ALARM BELL
- G.F.I. RECEPTACLE
- DRYER OR KILN RECEPTACLE 2P-30A
- MANUAL FIRE ALARM STATION SEE SPECS.
- EXIT SIGN

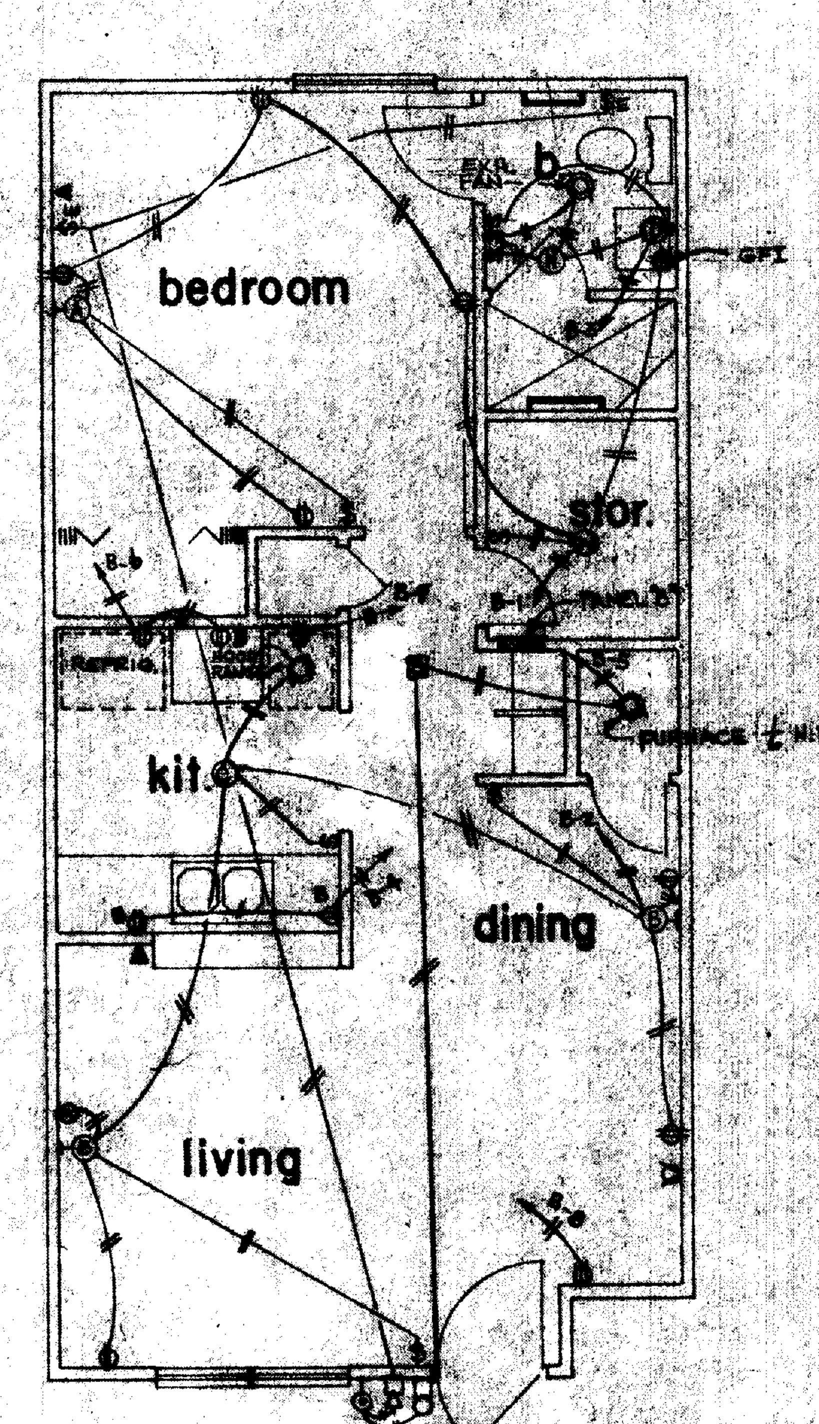
T.V. ANTENNA SYSTEM

INSTALL A TV ANTENNA RECEPTACLE IN EACH LIVING ROOM AS SHOWN, COMPLETE WITH BOX & PLATE. INSTALL COAXIAL CABLE FROM EACH OUTLET TO AMPLIFIER IN COMMUNITY CENTER BLDG., COMPLETE WITH SPLITTERS, CONNECTORS, TERMINAL CABINETS, ETC. CABLES SHALL BE RUN IN WALLS OR FLOOR JOIST SPACE (NO CONDUIT) AND DIRECT BURIAL (18" MIN.) OUTSIDE BLDG. INSTALL ALL BAND ANTENNA ON 3RD FLOOR ROOF. GROUND TO COLD WATER PIPE. INSTALL AMPLIFIER TO PROVIDE SUFFICIENT SIGNAL AT EACH OUTLET ON ALL LOCAL CHANNELS, WITH NO OBJECTIONABLE GHOSTS.

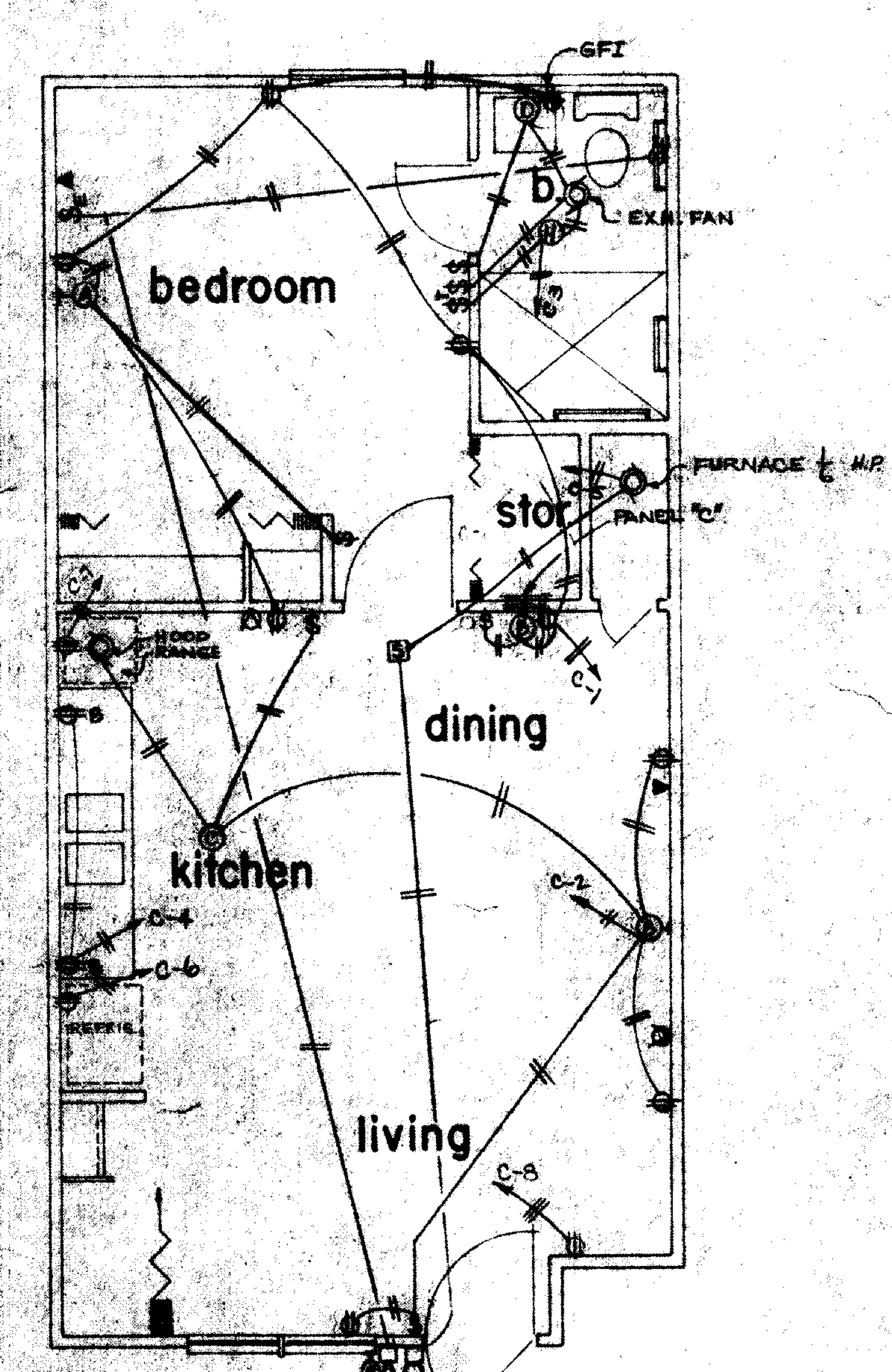
MANUAL FIRE ALARM SYSTEM - SEE SPECS.



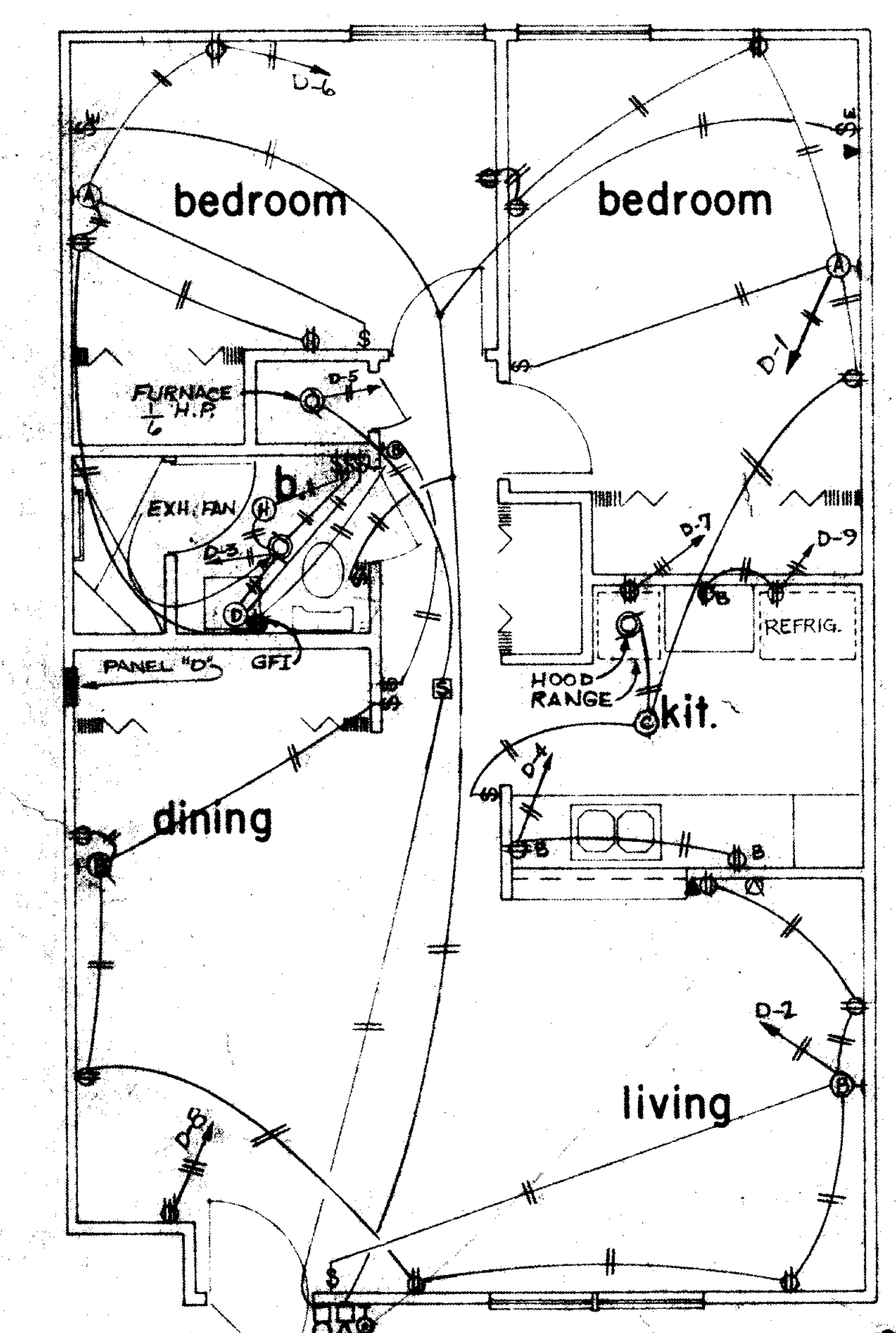
UNIT-A —ELECTRICAL



UNIT-B - ELECTRICAL



UNIT-C - ELECTRICAL
HANDICAPPED



UNIT-D — ELECTRICAL

ANDERSON ENGINEERING COMPANY
SAN ANTONIO, TEXAS

STATE OF TEXAS
39543
REGISTERED PROFESSIONAL ENGINEER

ralph c. bender & assoc. inc.
environmental planning • urban design • architecture
8026 vantage drive
san antonio texas 78230
phone: 512 · 342 · 3291

PROJECT
San Antonio Housing Authority
100 UNIT ELDERLY PROJECT
LAWNDALE DRIVE
HUD PROJECT NO TEX 59-0007-004
OWNER

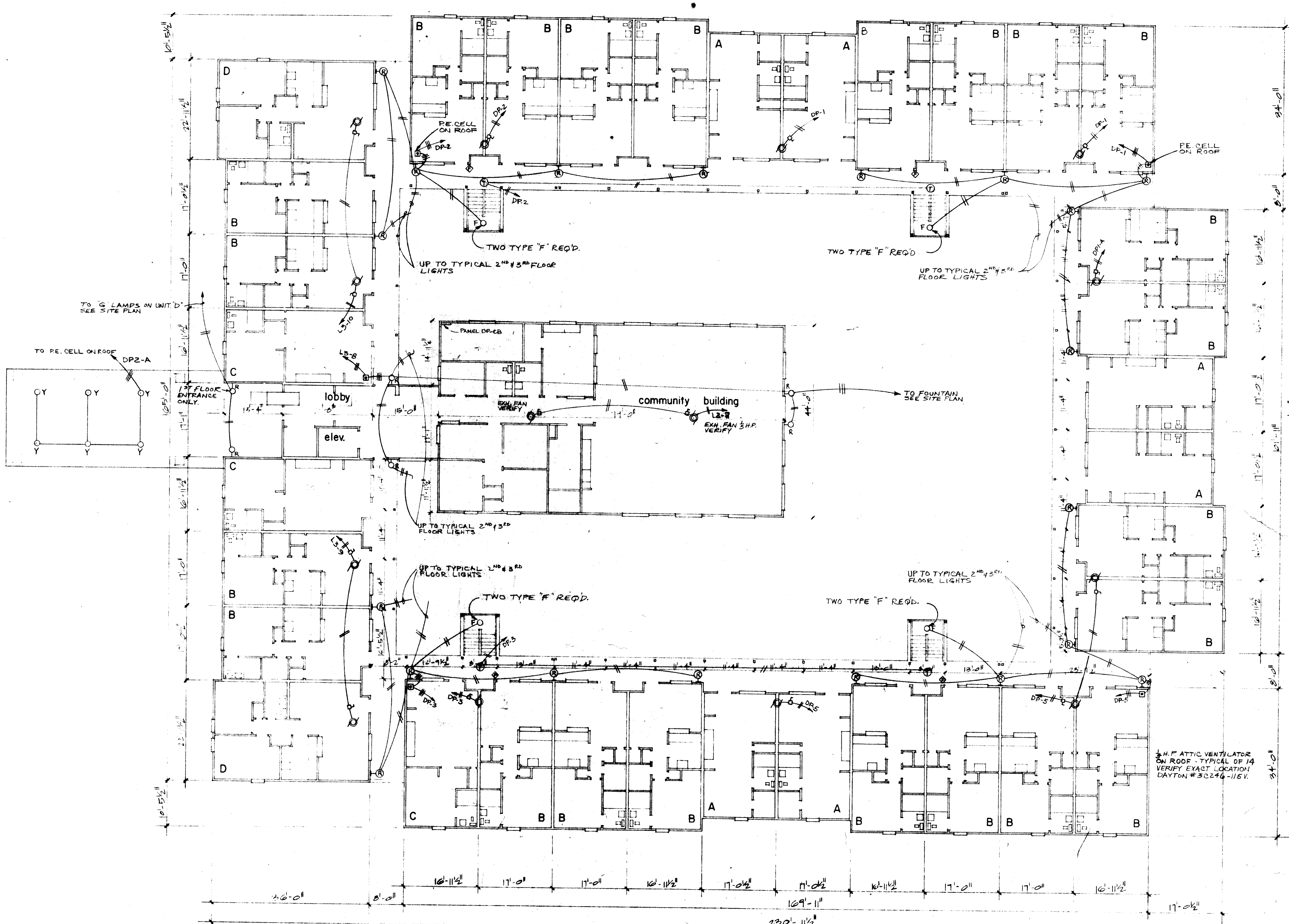
PROJECT NUMBER:	7820
DRAWN:	JDS
CHECKED:	
APPROVED:	
DATE:	3-21-78
REVISED:	

SHEET
33
OF 34

4404

ANDERSON ENGINEERING COMPANY
SAN ANTONIO, TEXAS

STATE OF TEXAS
JACK D. SEGLER
39543
REGISTERED PROFESSIONAL ENGINEER



ralph c. bender & assoc. inc.
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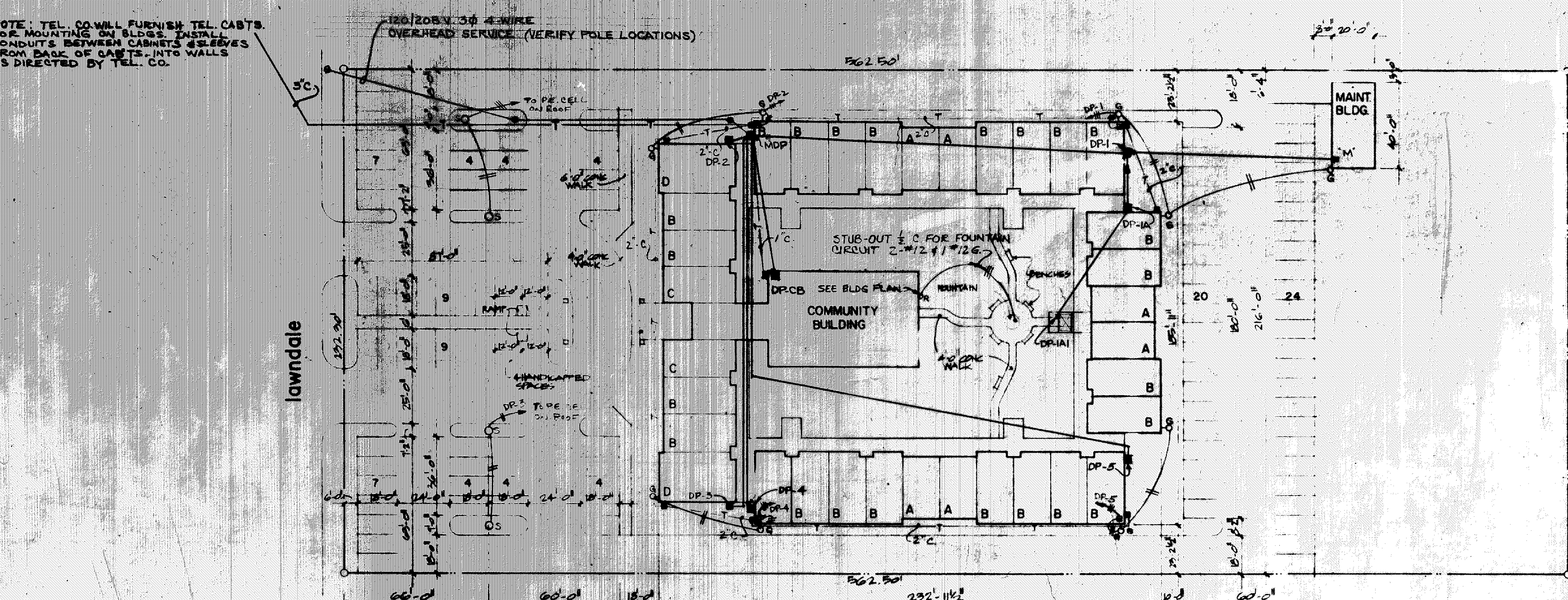
8026 vantage drive
san antonio texas 78230
phone: 512 - 342 - 3291

PROJECT
San Antonio Housing Authority
100 UNIT ELDERLY PROJECT
LAWNDALE DRIVE
HUD PROJECT NO TEX 59-0007-004
OWNER

PROJECT NUMBER:	7820
DRAWN:	JDS
CHECKED:	
APPROVED:	
DATE:	3-21-78
REVISED:	

SHEET
32
OF 34

BUILDING PLAN - ELECTRICAL
SCALE:



site plan - ELECTRICAL

SCALE: 1" = 30'-0"

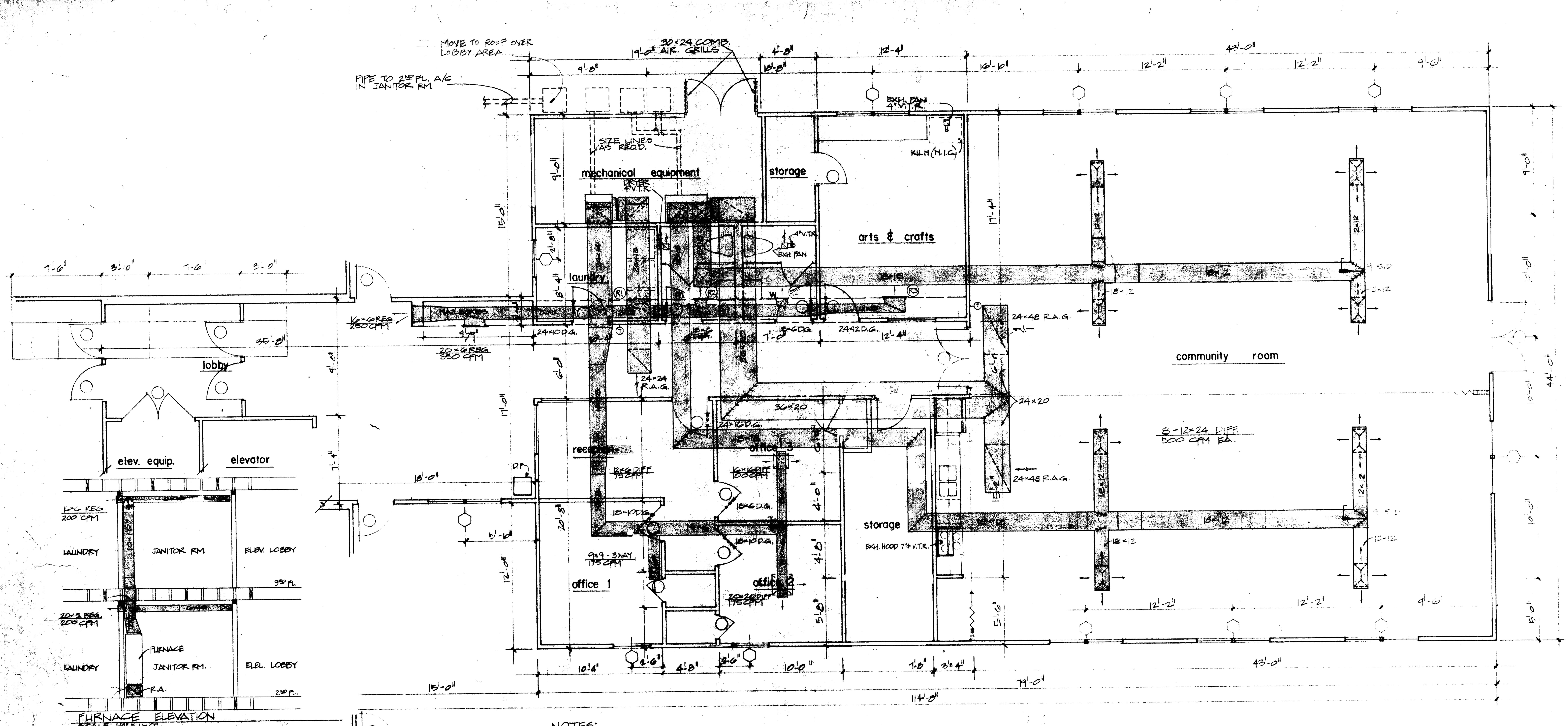
ANDERSON ENGINEERING COMPANY
SAN ANTONIO, TEXAS

ralph c. bender & assoc. inc.
environmental planning • urban design • architecture
8026 vantage drive
san antonio texas 78230
phone: 512 342-3291

PROJECT
San Antonio Housing Authority
100 UNIT ELDERLY PROJECT
LAWNDALE DRIVE
HUD PROJECT NO TEX 59-0007-004
OWNER

PROJECT NUMBER:	7829
DRAWN:	JDS
CHECKED:	
APPROVED:	
DATE:	3-21-78
REVISED:	
A	7-27-78 JDS

SHEET 31 OF 34

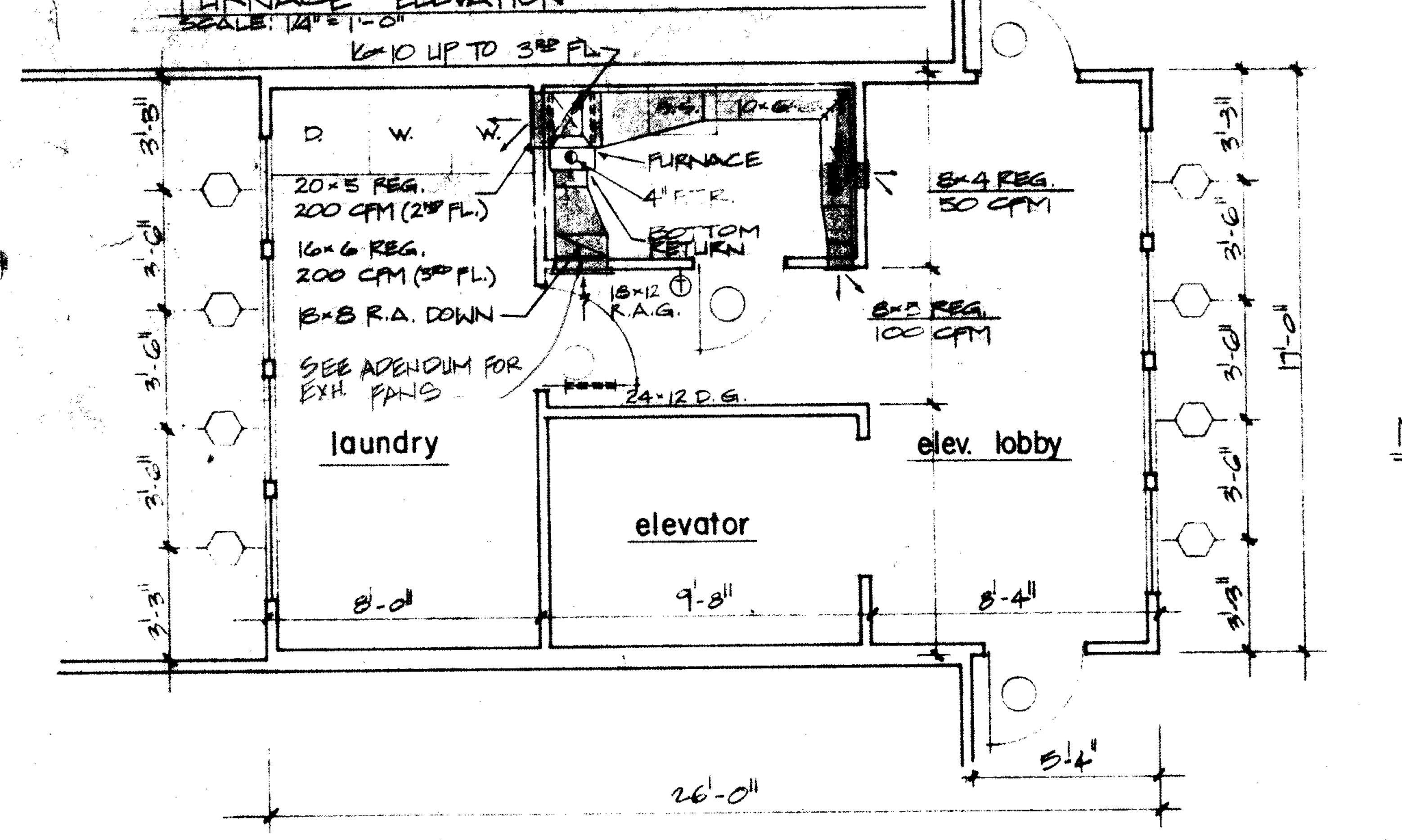


LOBBY & COMMUNITY BUILDING FLOOR PLAN MECHANICAL

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

NOTES:

- (R1) 16×6 REG. — 225 CFM
- (R2) 10×4 REG. — 100 CFM
- (R3) 20×6 REG. — 300 CFM



SECOND & THIRD FLOOR ELEVATOR LOBBY PLAN

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

MECHANICAL

MECHANICAL EQUIPMENT NOTES:

1.) FURNACES:

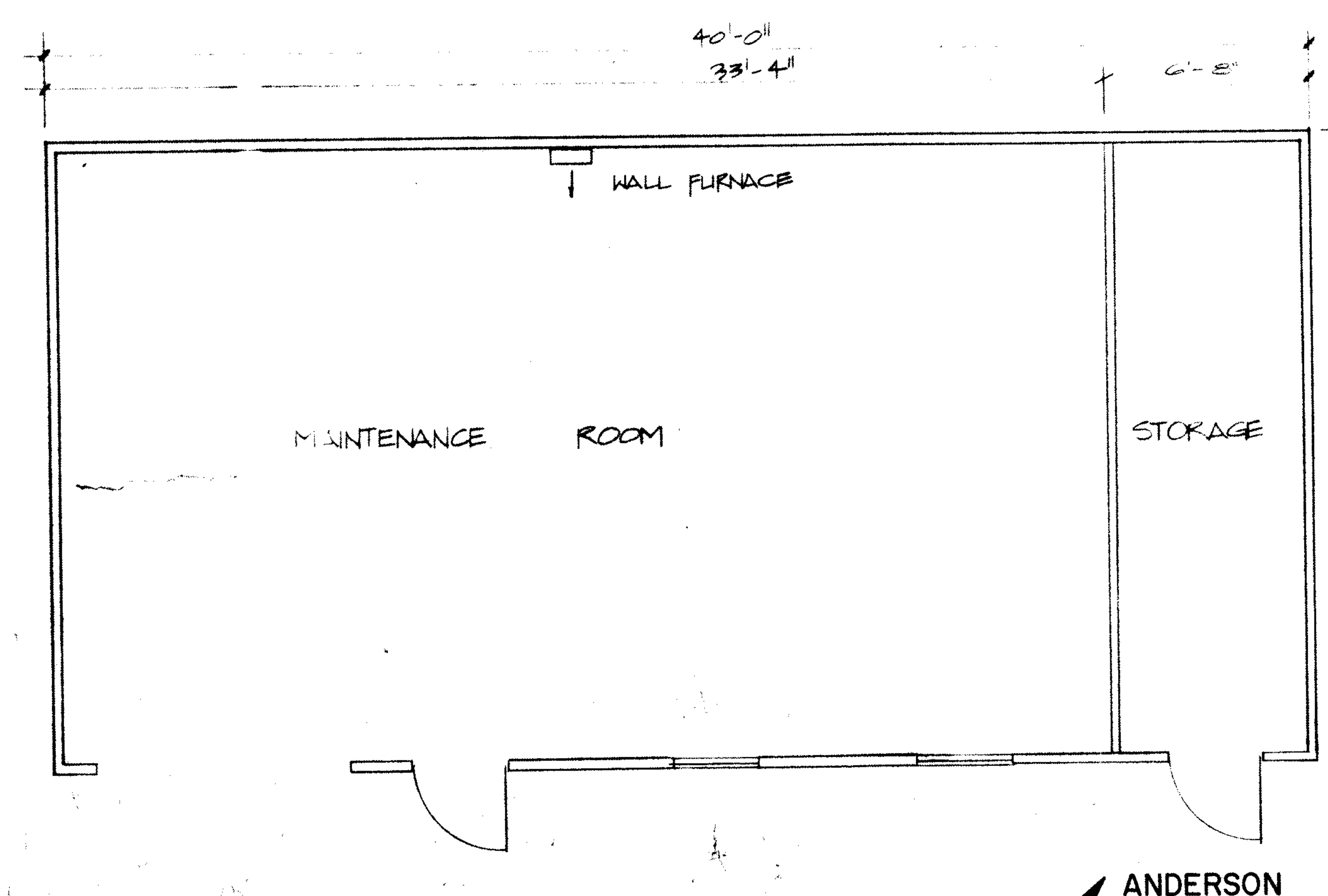
UNIT "A" - FEDDERS, CUG045N1D, 500 CFM, 115V/1φ/60Hz; 42,500 BTU INPUT, 34,000 BTU OUTPUT, OR EQUAL
"B" - " , 550 CFM, " "
"C" - " , 500 CFM, " "
"D" - " , 600 CFM, " "
2ND FL. LAUNDRY, CUG065N1D, 700 CFM, " , 65,000 BTU INPUT, 52,000 BTU OUTPUT, "
MAINTENANCE RM., WILLIAMS WESTWOOD C28SD-1, 29,000 BTUH INPUT, 20,300 BTUH OUTPUT, OR EQUAL
COMM'TY RM " , CUG240N0B, 4,000 CFM, 230V/1φ/60Hz, 240 MBH INPUT, 192 MBH OUTPUT, OR EQUAL
COMM'TY LOBBY ", CUG140N5D, 1,850 CFM, 115V/1φ/60Hz, 140 MBH INPUT, 112 MBH OUTPUT "

2.) COOLING COILS:

2ND FL. LAUNDRY FEDDERS, CFA023C0C, OR EQUAL
COMM'TY RM " , CFA260A0A "
COMM'TY LOBBY " , CFA060C1C "

3.) CONDENSING UNITS:

2ND & 3RD FL. LAUNDRY: FEDDERS, CFC018D7B, OR EQUAL
COMM'TY RM: " , CKC061B7A, (2 REQ'D), OR EQUAL
COMM'TY LOBBY " " , OR EQUAL



MAINTENANCE BUILDING MECHANICAL

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

ANDERSON ENGINEERING COMPANY
SAN ANTONIO, TEXAS

ralph c. bender & assoc. inc.
environmental planning • urban design • architecture
8026 vantage drive, san antonio, texas 78230
phone: 512 · 342 · 3291

PROJECT
San Antonio Housing Authority
100 UNIT ELDERLY PROJECT
LAWNDALE DRIVE
HUD PROJECT NO TEX 59-0007-004
OWNER

PROJECT NUMBER:	7820
DRAWN:	
CHECKED:	
APPROVED:	
DATE:	3-21-78
REVISED:	

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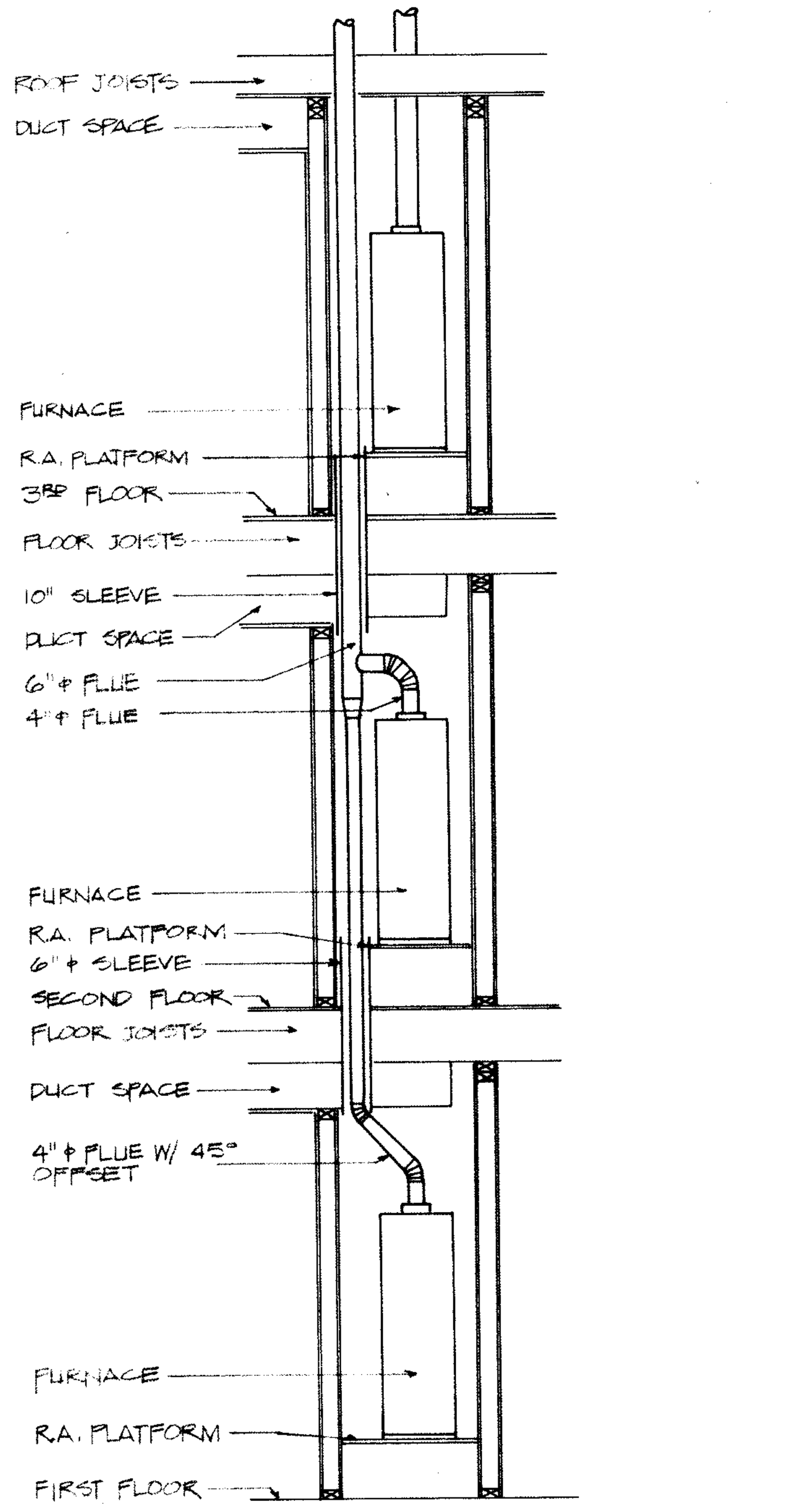
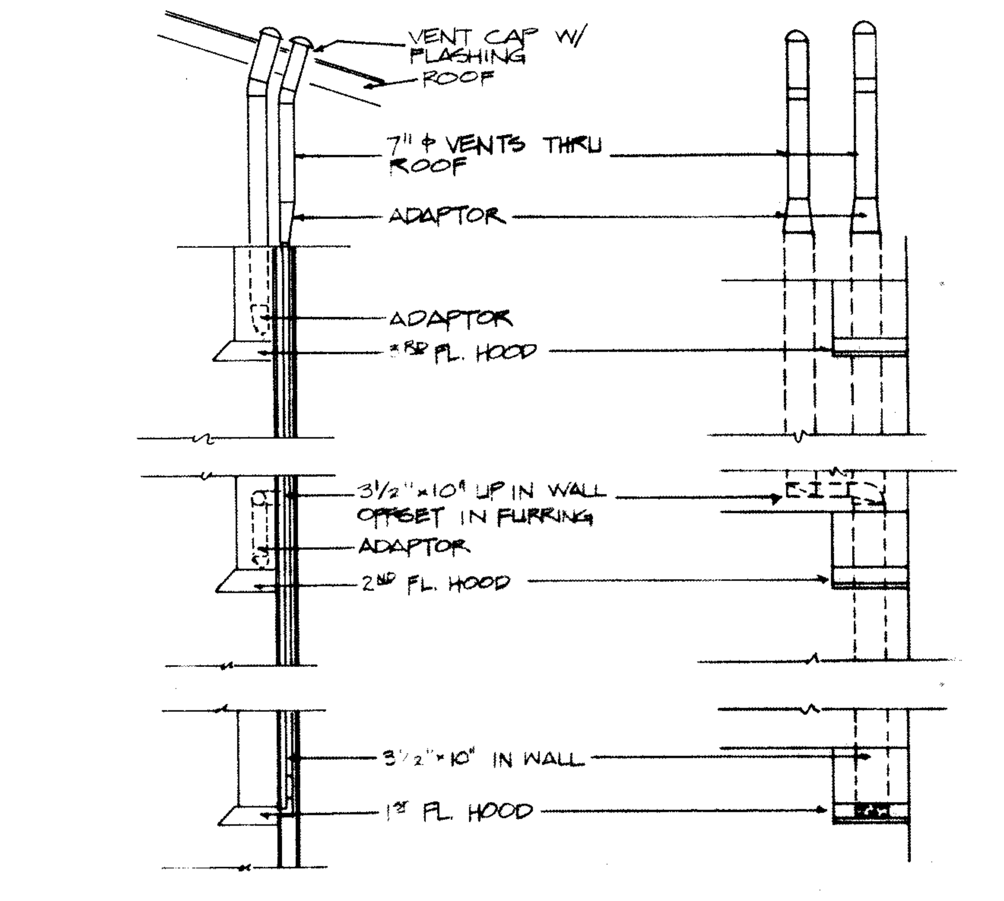
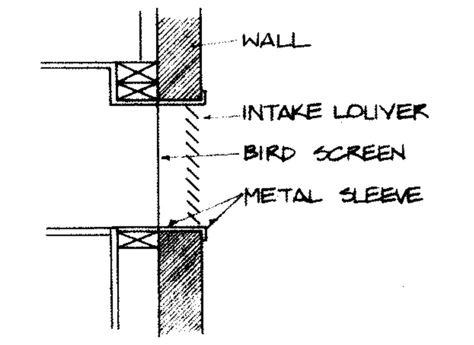


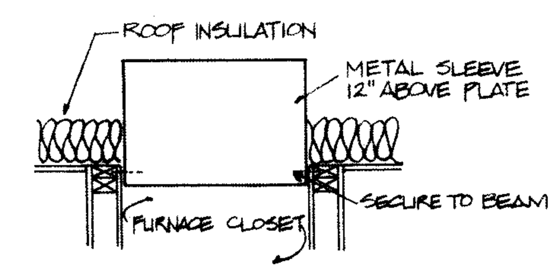
TYP. EQUIPMENT ROOM SECTION
SCALE: 1/4" = 1'-0"



KITCHEN HOOD EXHAUST VENT DETAIL
SCALE: 1/4" = 1'-0"

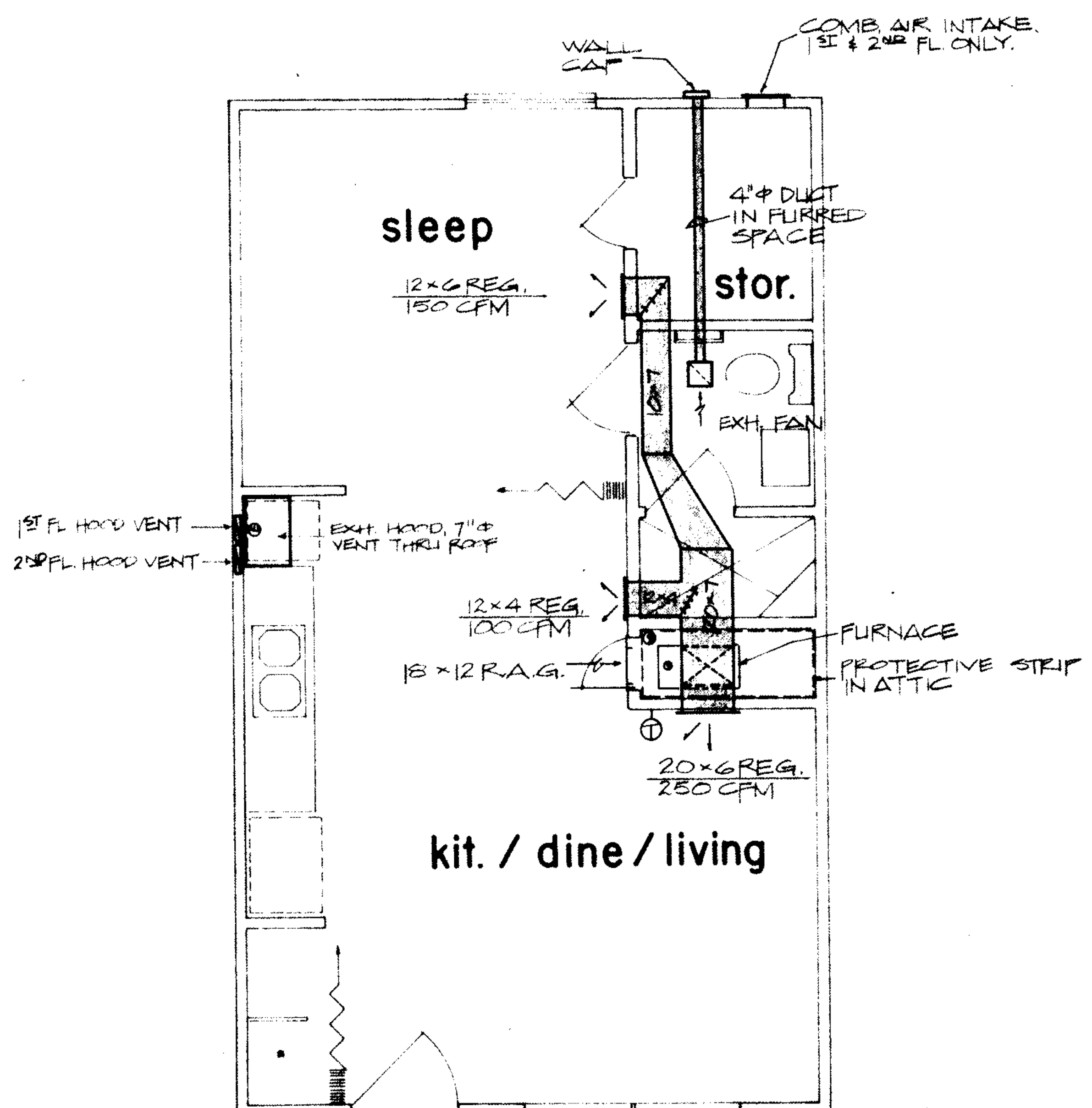


COMB. AIR LOUVER DETAIL
SCALE: NONE

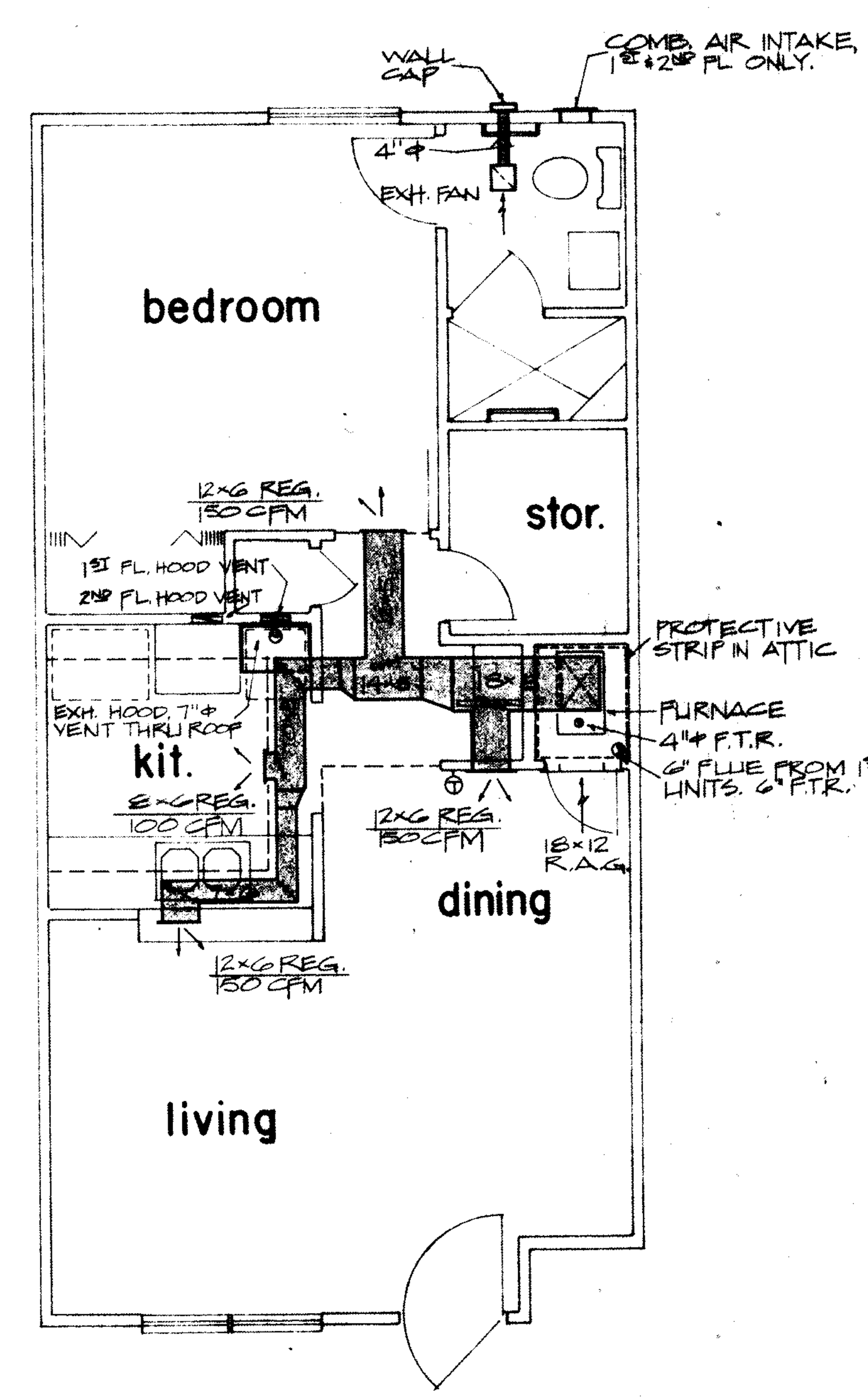


PROTECTIVE STRIP DETAIL
SCALE: NONE

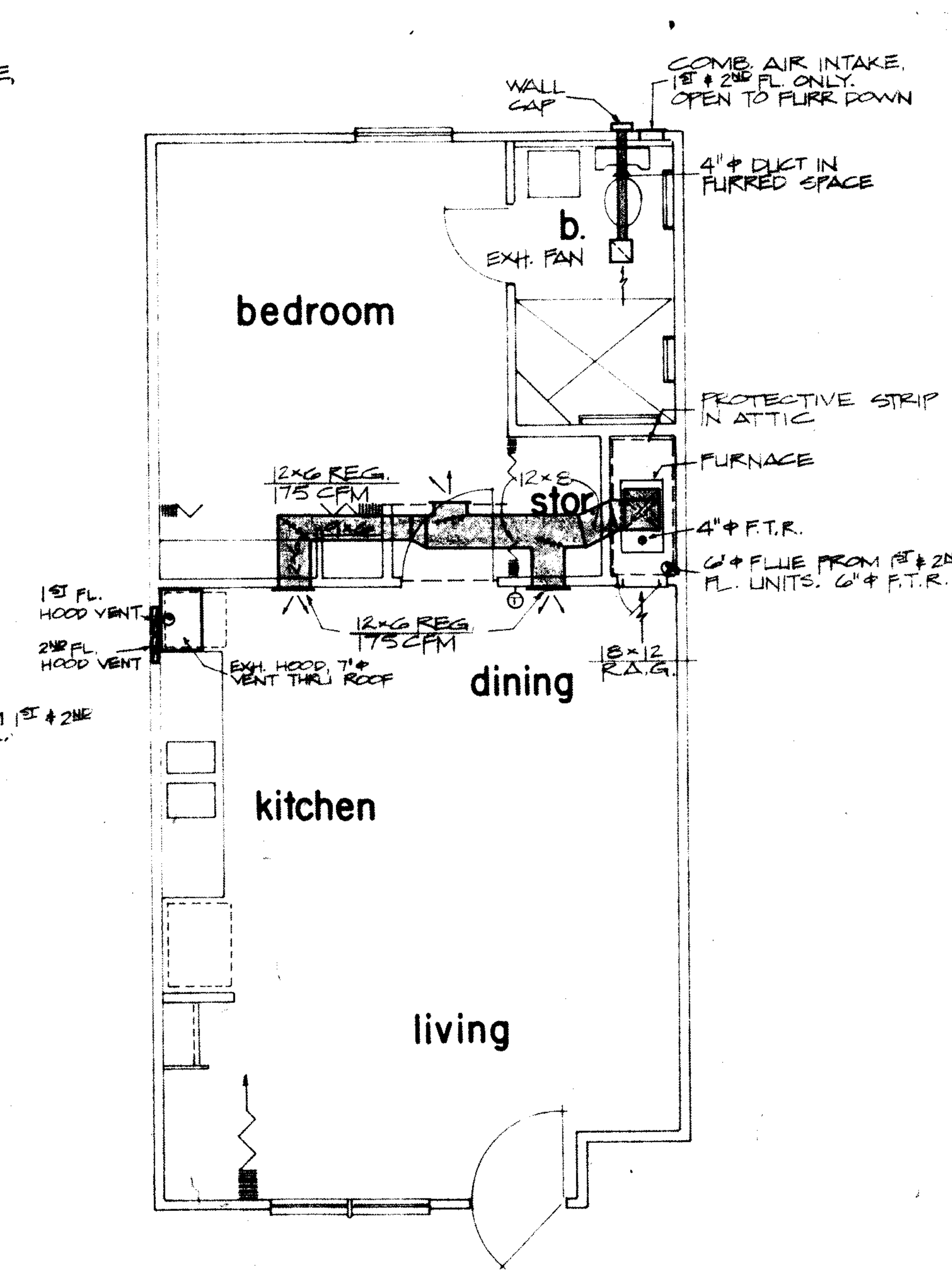
MECHANICAL SYMBOLS	
	SUPPLY REGISTER (REG.)
	RETURN GRILL (R.A.G.)
	SUPPLY DUCT UP
16×6	VIEWED DIMENSION × DEPTH
	SPLITTER DAMPER
	THERMOSTAT
D.G.	DOOR GRILL



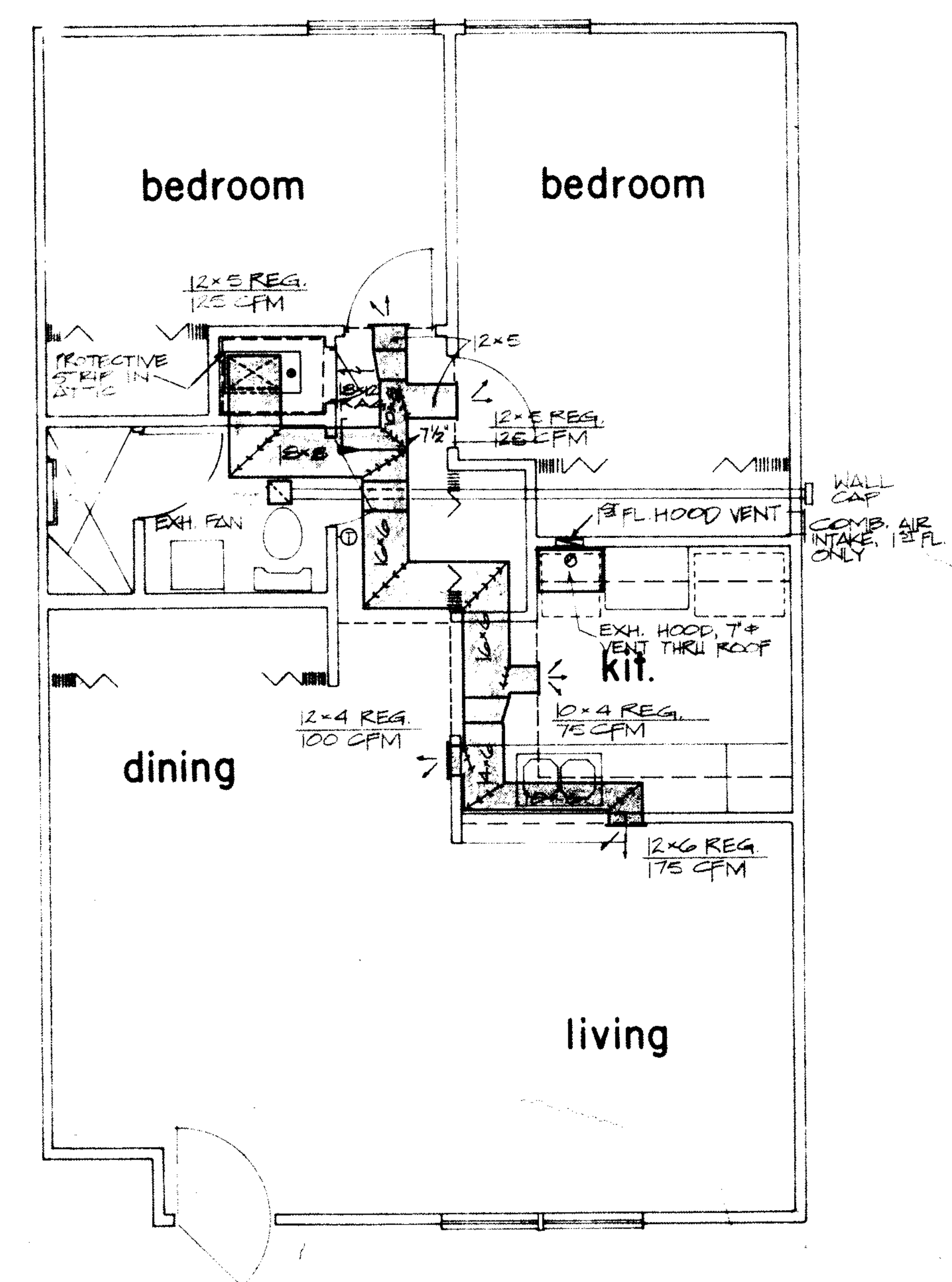
UNIT-A MECHANICAL



UNIT-B MECHANICAL



UNIT-C MECHANICAL
HANDICAPPED



UNIT-D MECHANICAL

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environmental planning • urban design • architecture
8026 vantage drive
san antonio texas 78230
phone: 512 342-3291

PROJECT
San Antonio Housing Authority
100 UNIT ELDERLY PROJECT
LAWNDALE DRIVE
HUD PROJECT NO. TEX 59-0007-004
OWNER

PROJECT NUMBER: 7820
DRAWN:
CHECKED:
APPROVED:
DATE: 3-21-78
REVISED:

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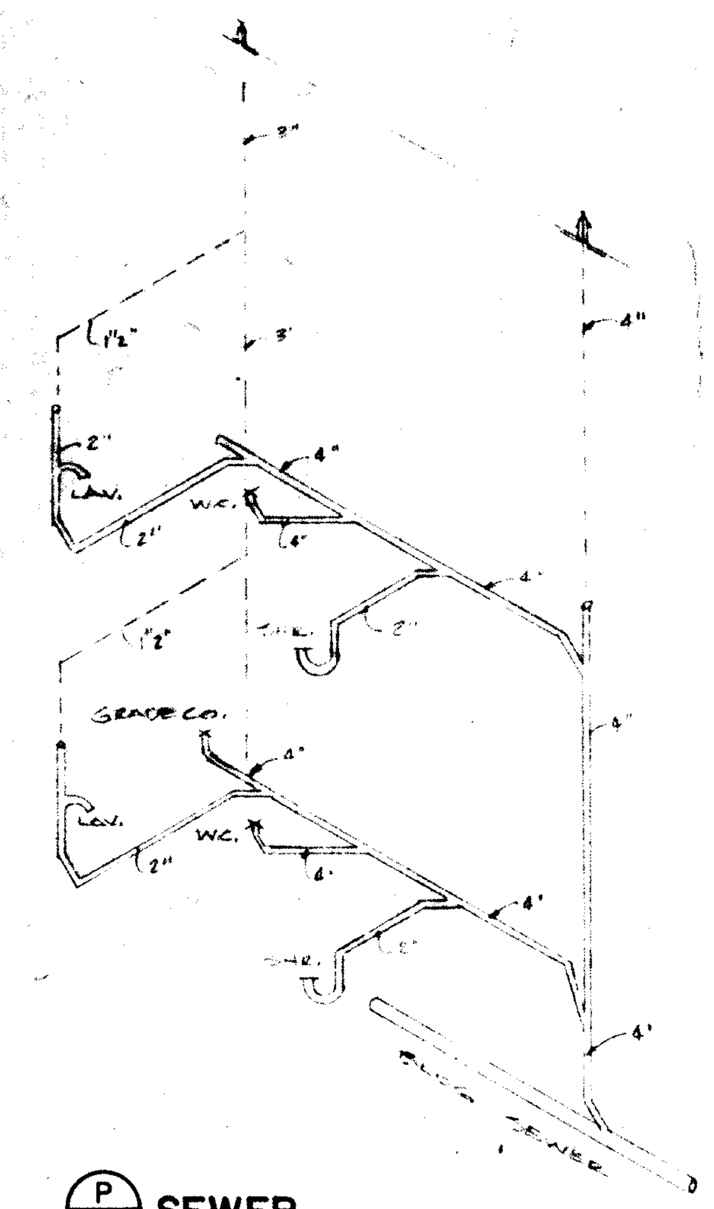
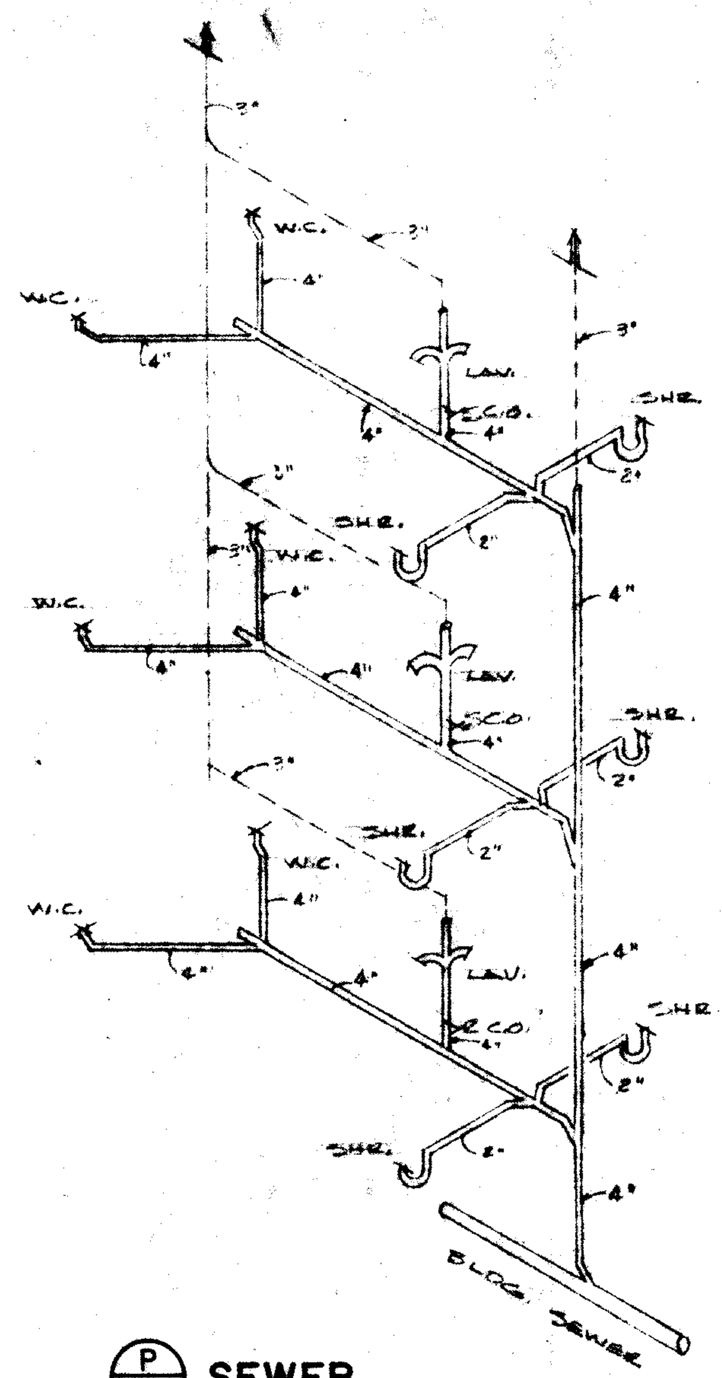
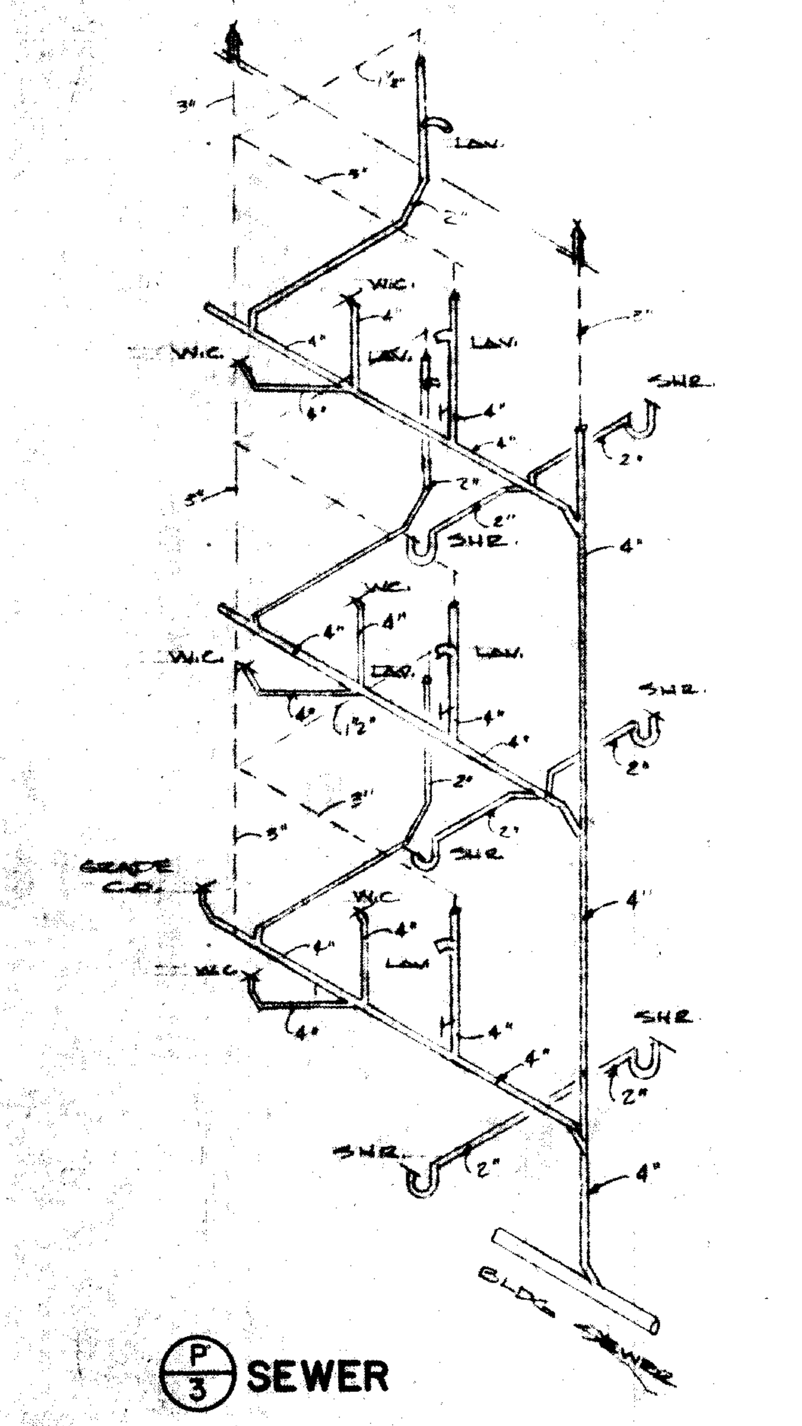


(P/1) SEWER

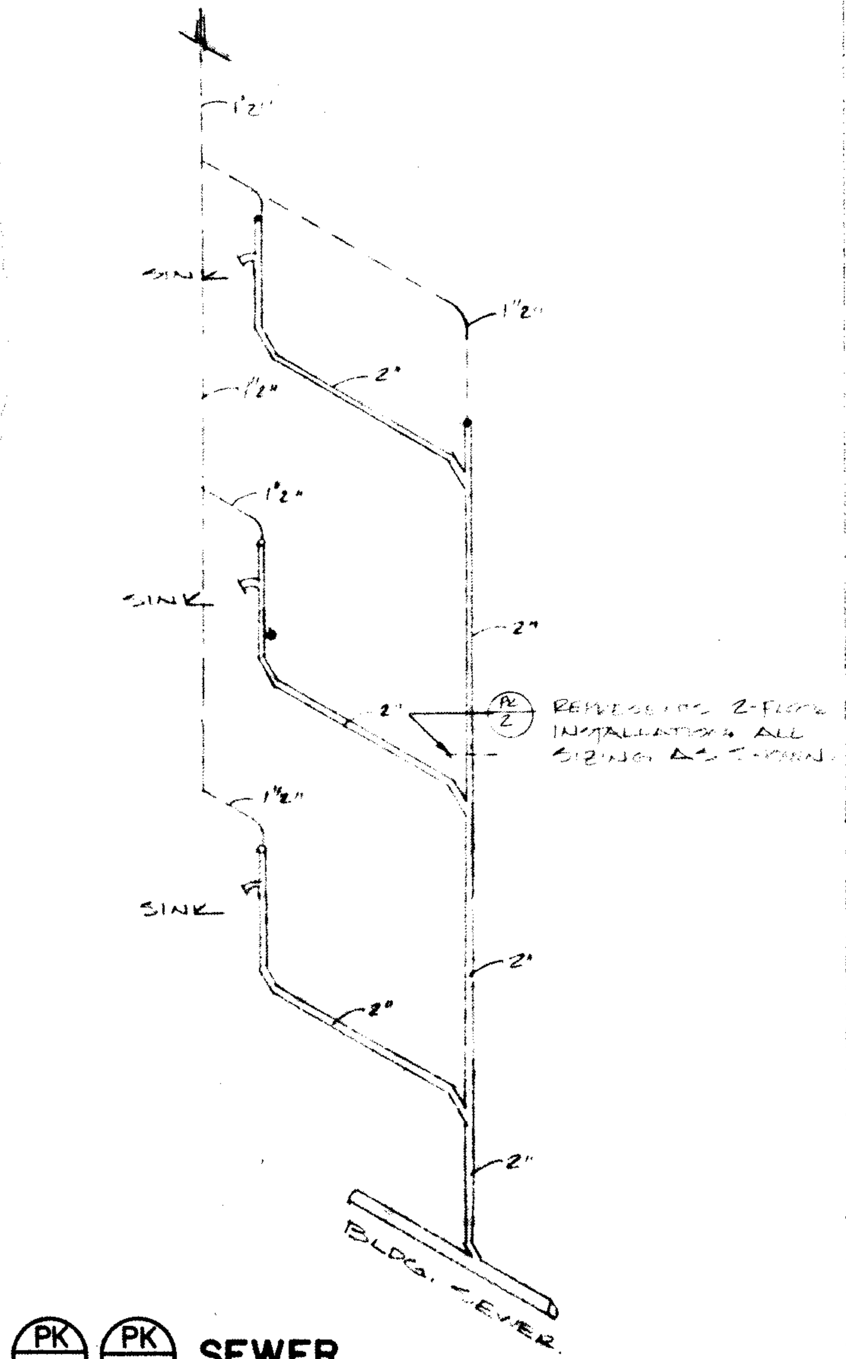


(P/2) SEWER

(P/4) (One side only)

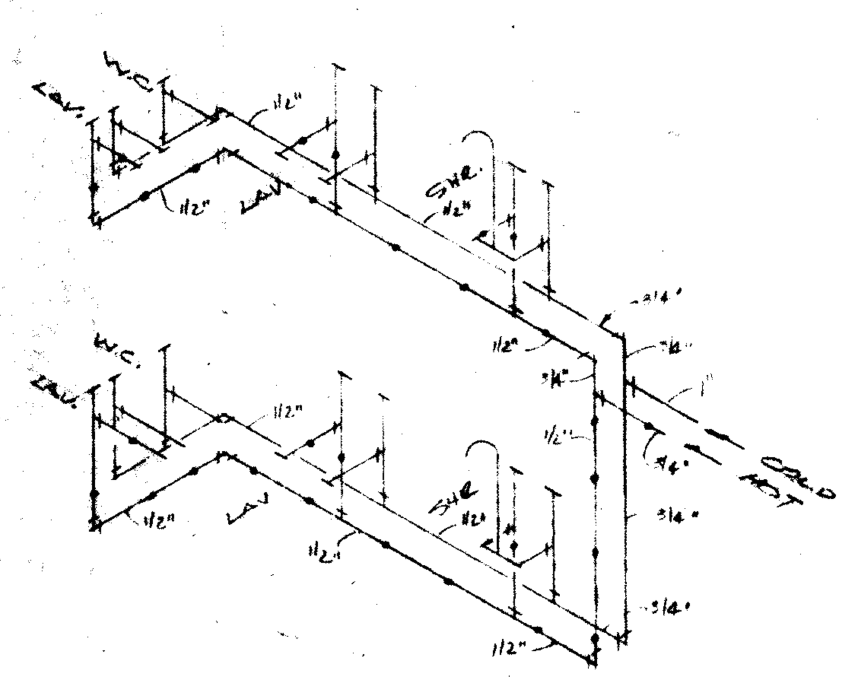


(P/3) SEWER

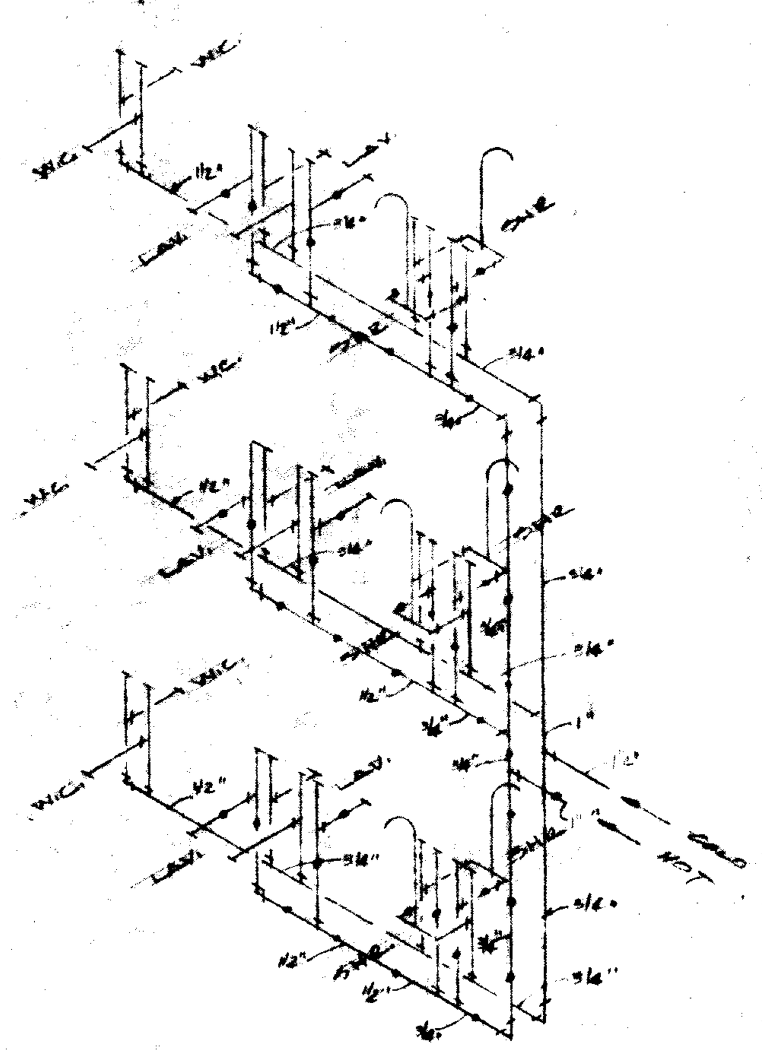


(PK/1) (PK/2) SEWER

(G/1) GAS

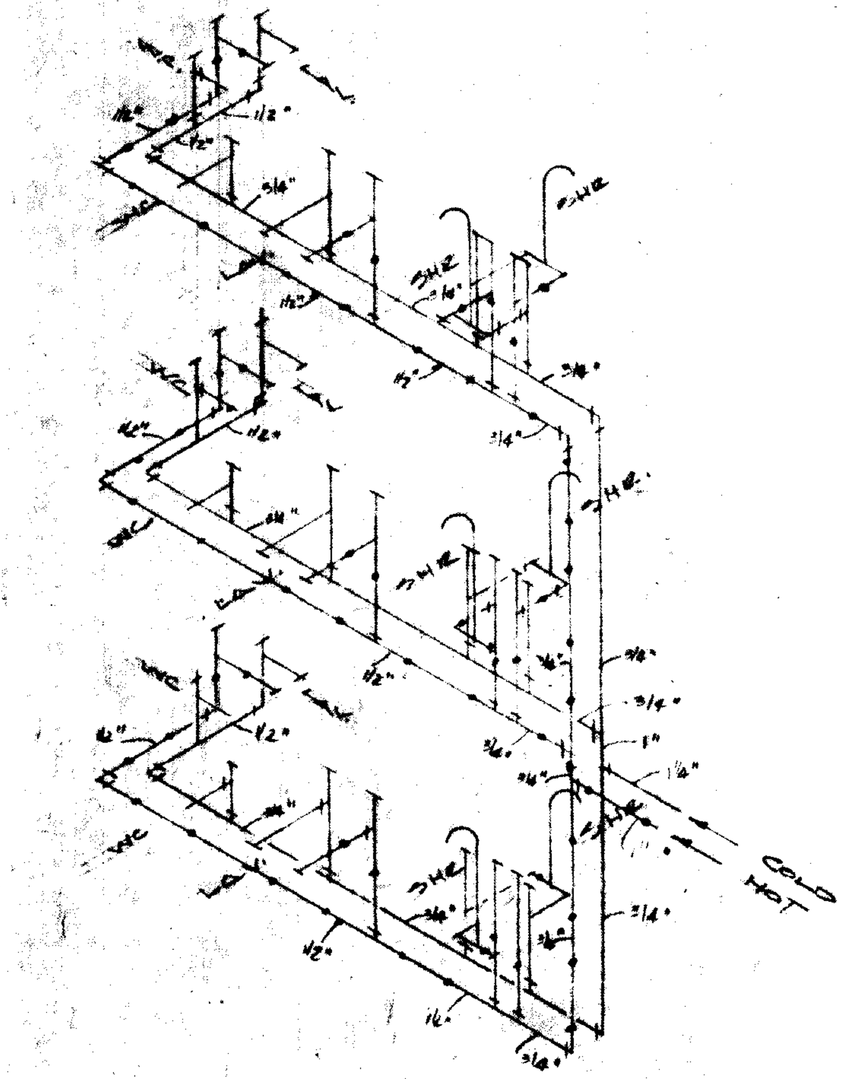


(P/1) WATER

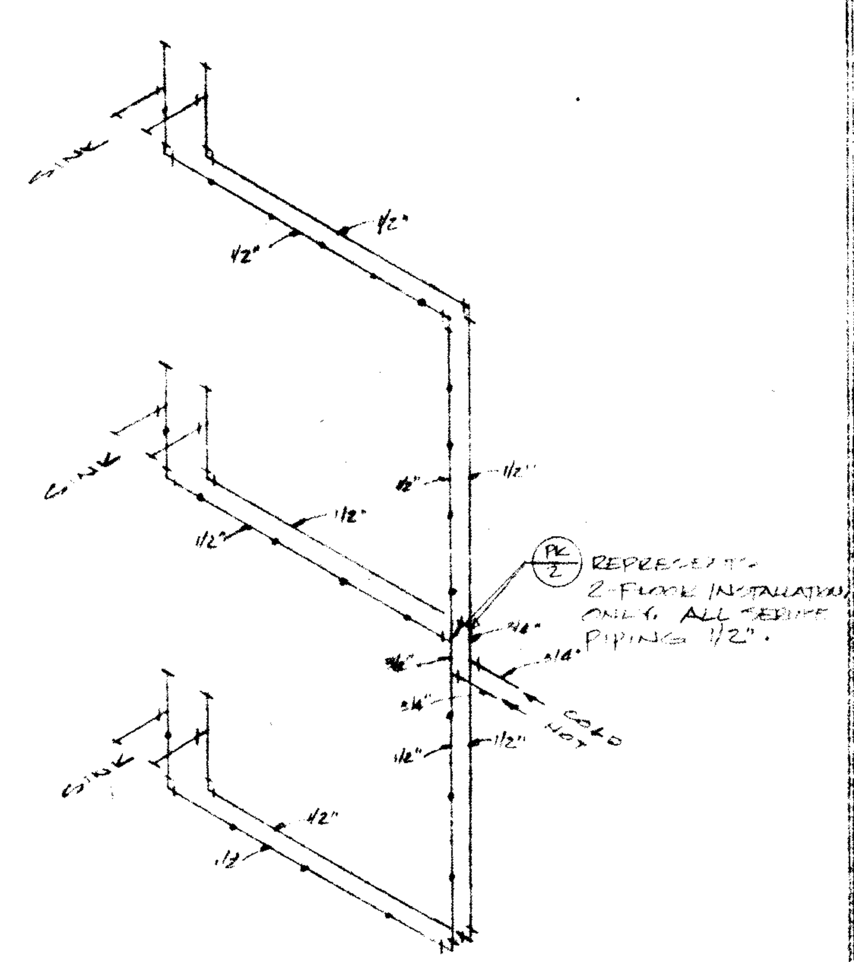


(P/2) WATER

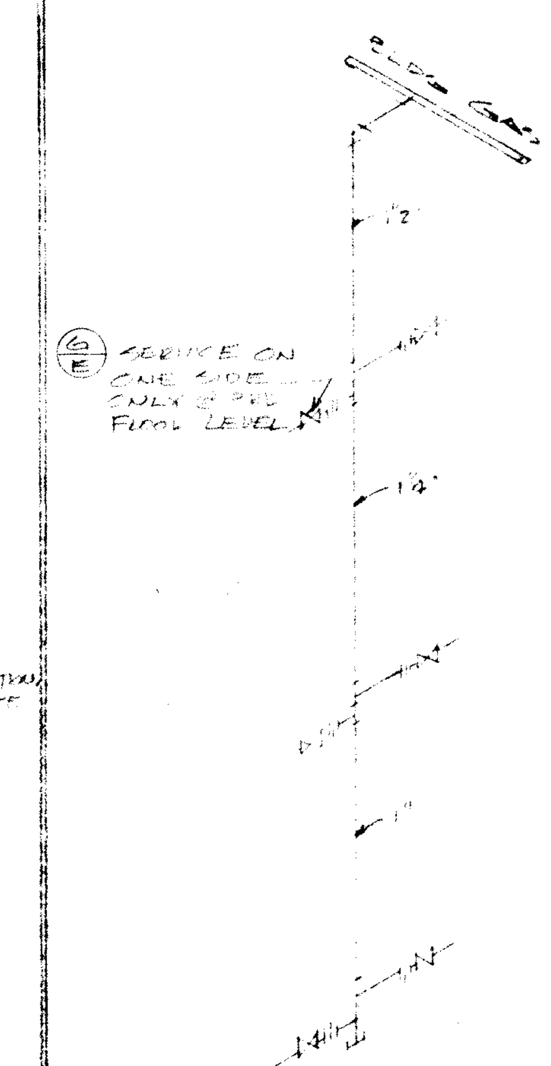
(P/4) (One side only)



(P/3) WATER



(PK/1) (PK/2) WATER



(G/2) GAS

(G/3) (As noted)

NOTE:
THE CONTRACTOR SHALL USE THESE SCHEMATIC DETAILS AS A GUIDE ONLY. ACTUAL PLACEMENT SHALL BE DETERMINED TO MINIMIZE CUTS OF FRAMING MEMBERS, AND SIZED IN ACCORDANCE WITH U.P.C. REQUIREMENTS.

SCHEMATIC PIPING DETAILS SEWER-WATER-GAS

SCALE: NONE

ANDERSON ENGINEERING COMPANY
SAN ANTONIO, TEXAS

ralph c. bender & assoc. inc.
environmental planning • urban design • architecture
8026 vantage drive
san antonio texas 78230
phone: 512 342 3291

PROJECT
San Antonio Housing Authority
100 UNIT ELDERLY PROJECT
LAWNDALE DRIVE
HUD PROJECT NO TEX 59-0007-004
OWNER

PROJECT NUMBER: 7820
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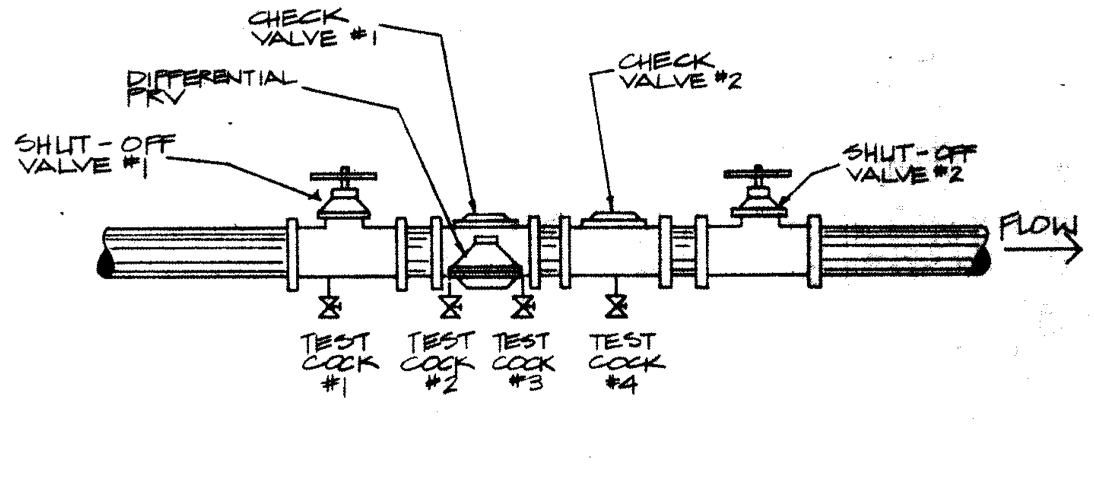
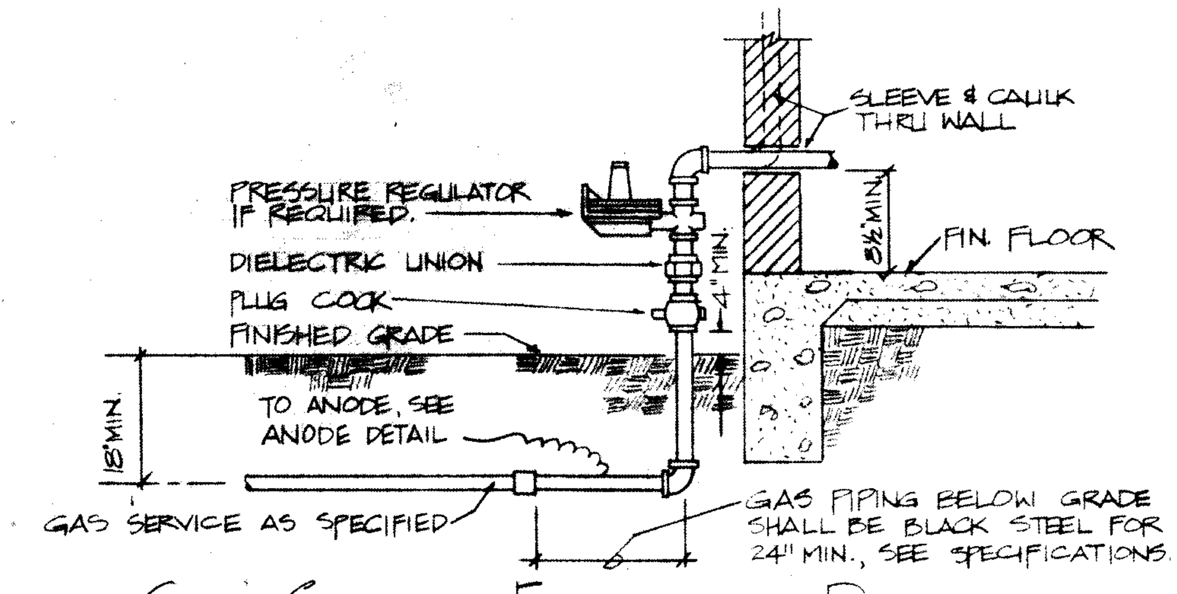
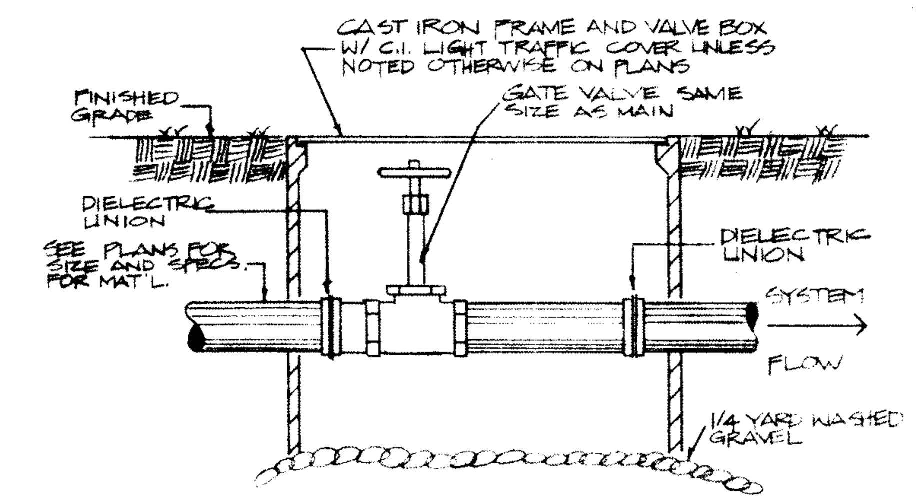


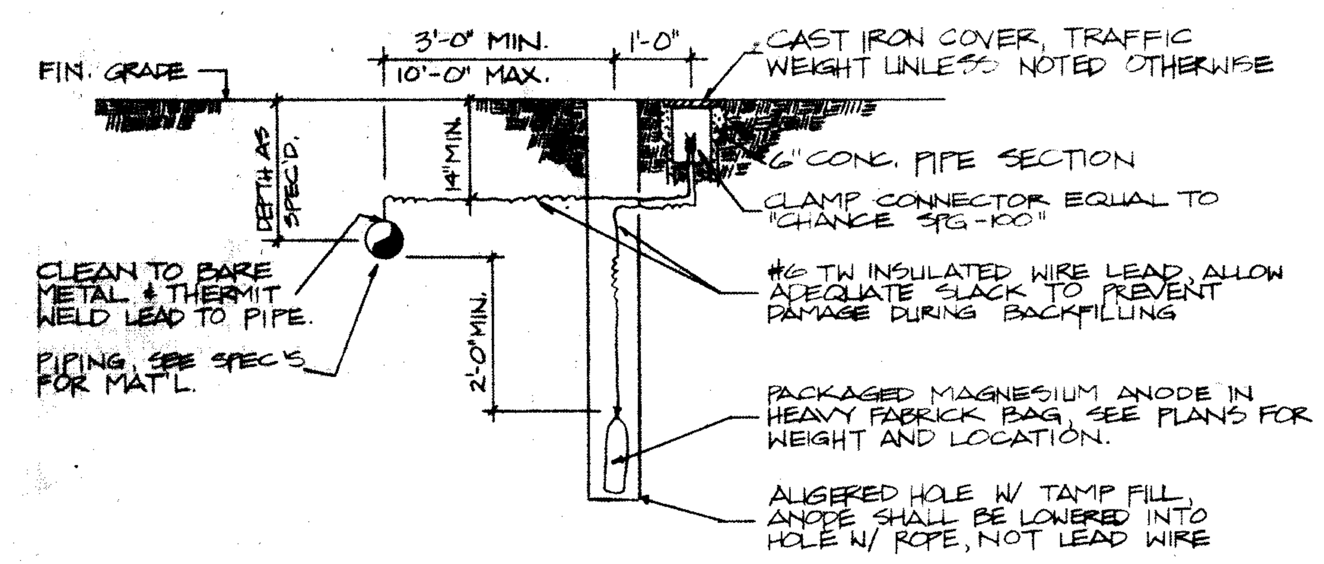
BACKFLOW PREVENTER DETAIL
NO SCALE



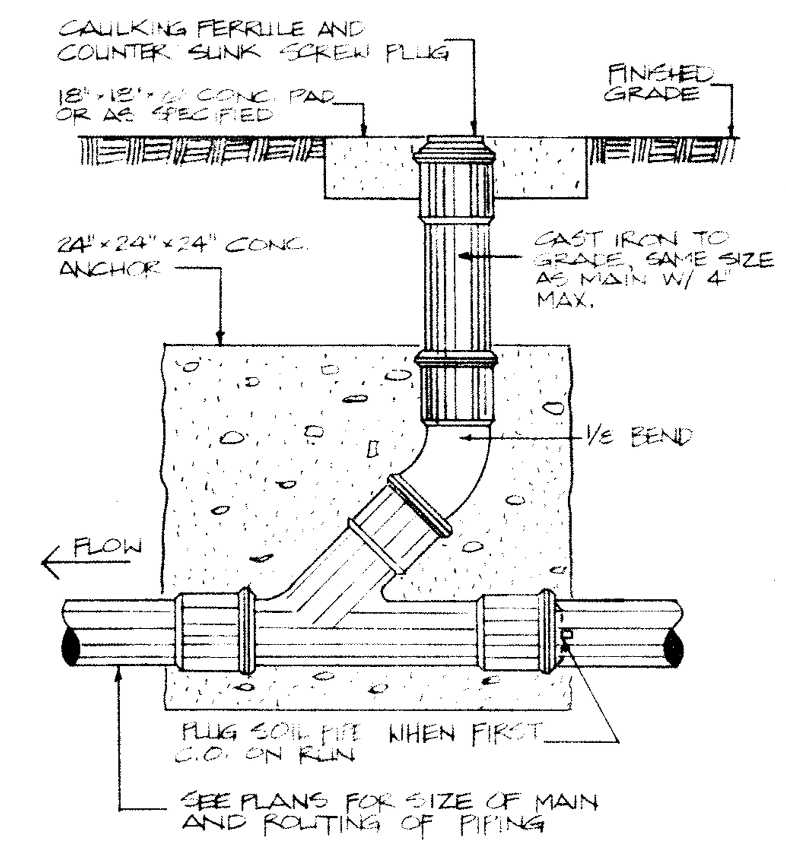
GAS SERVICE ENTRANCE DETAIL
NO SCALE



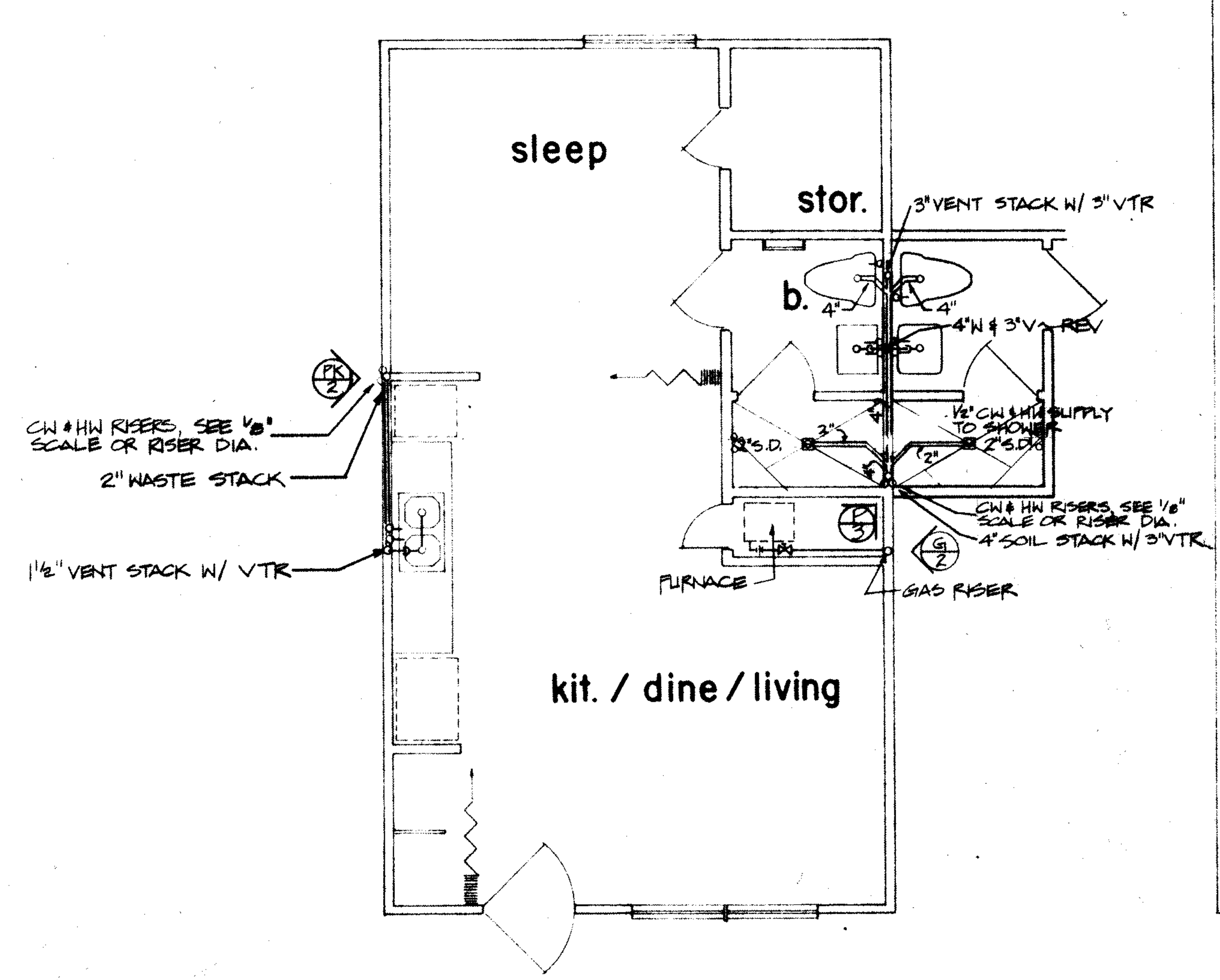
DOMESTIC WATER VALVE BOX DETAIL
NO SCALE



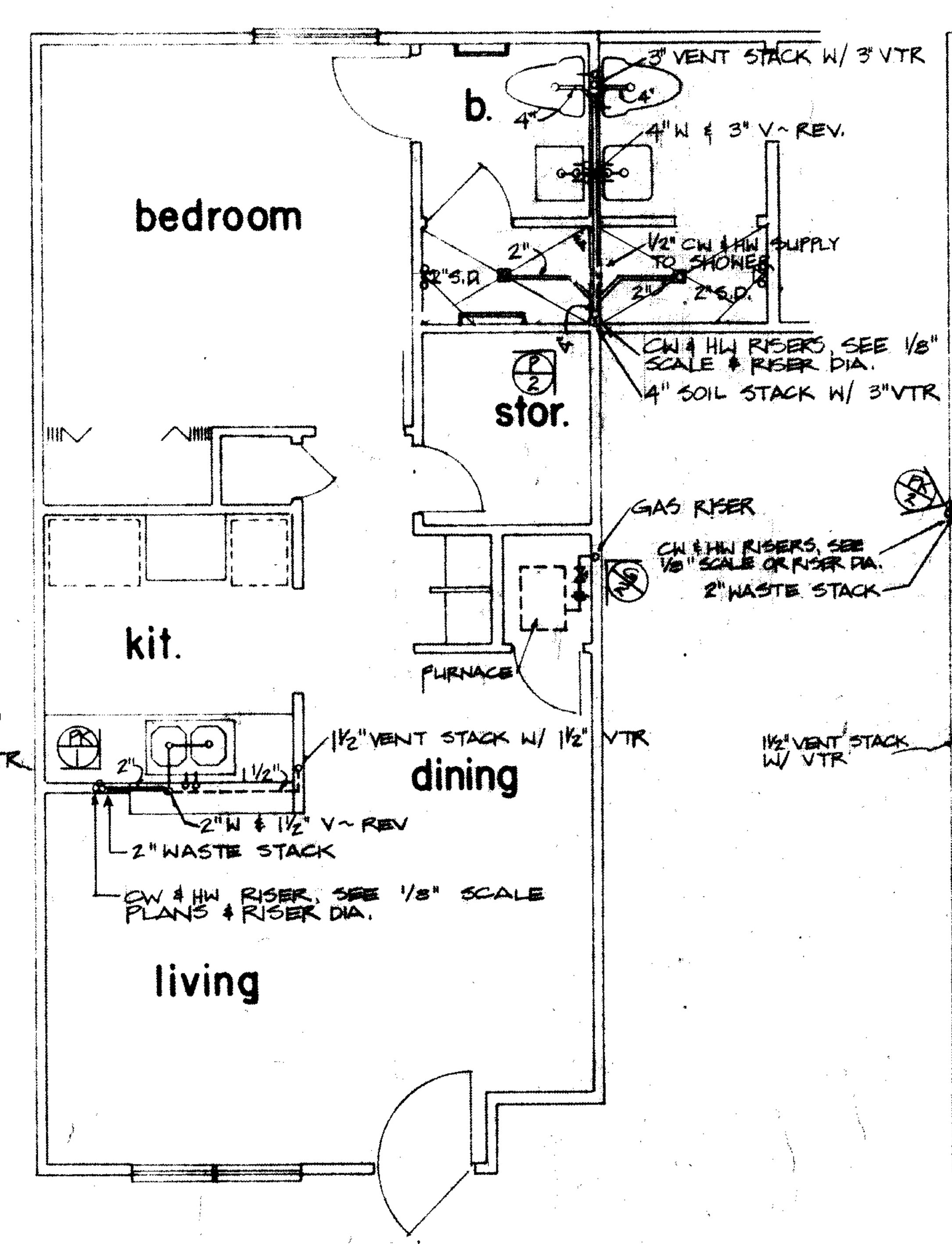
ANODE INSTALLATION DETAIL
NO SCALE



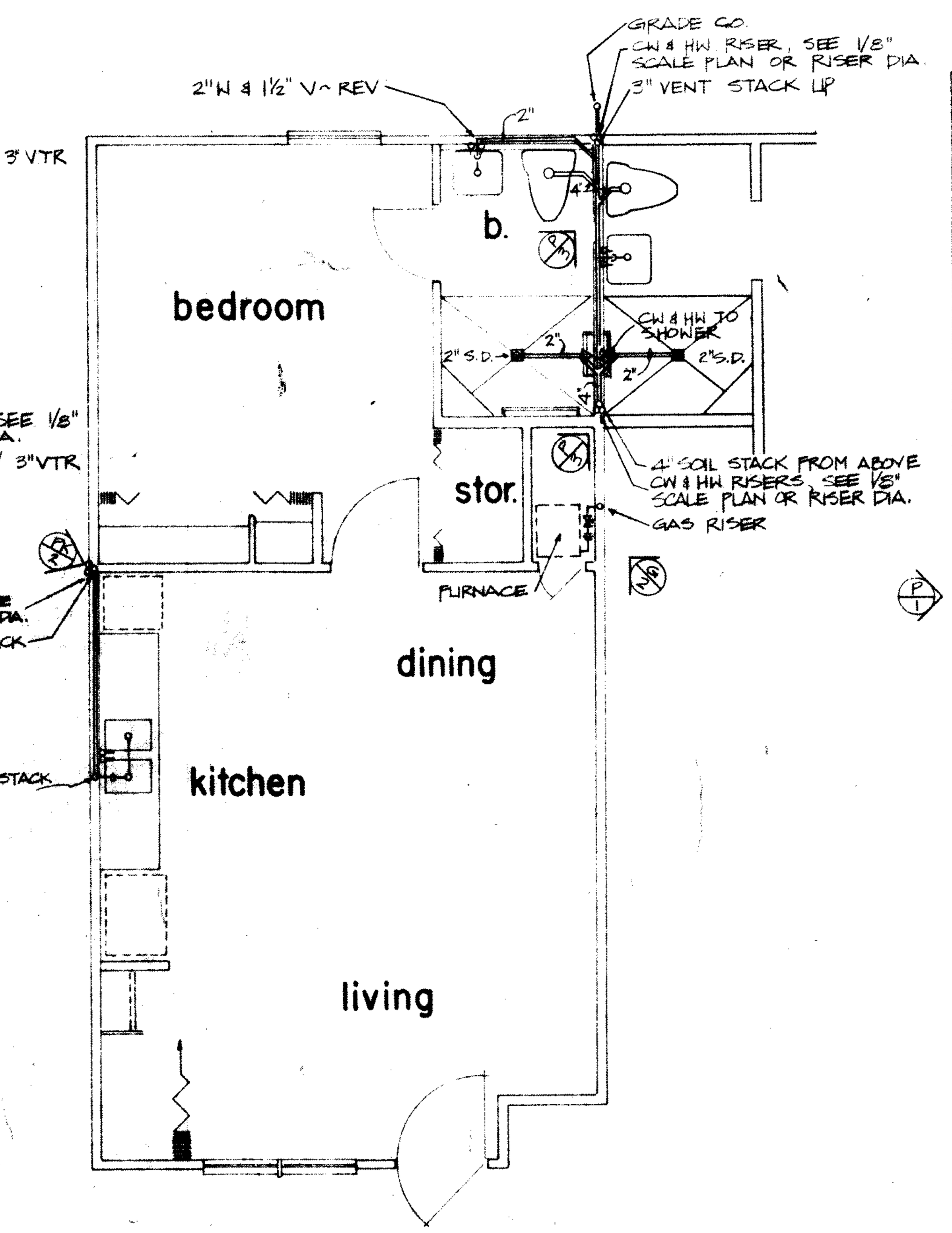
GRADE CLEANOUT DETAIL
NO SCALE



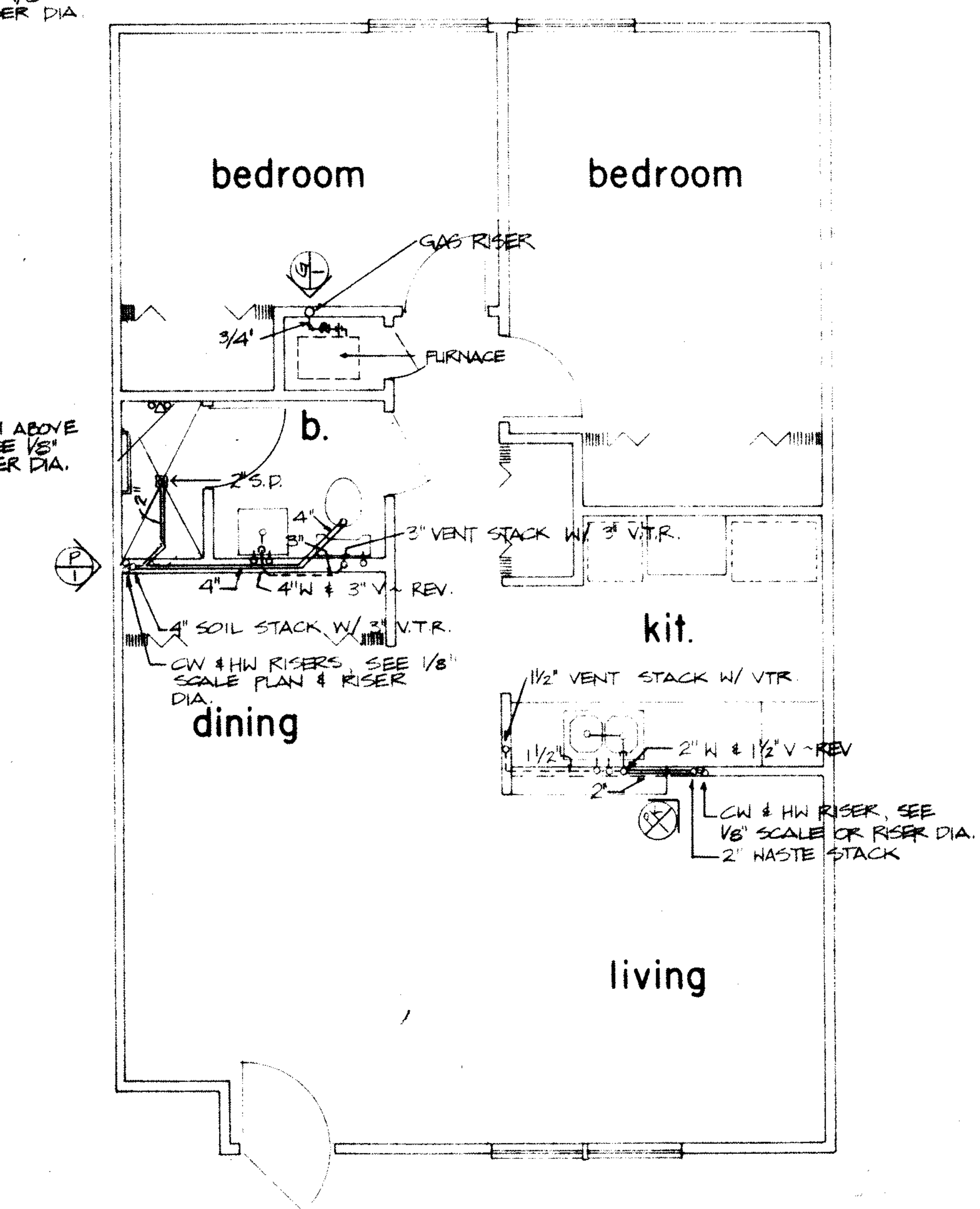
UNIT-A PLUMBING



UNIT-B PLUMBING



UNIT-C PLUMBING
HANDICAPPED



UNIT-D PLUMBING

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PROJECT
San Antonio Housing Authority
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LAWNDALE DRIVE
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OWNER

PROJECT	
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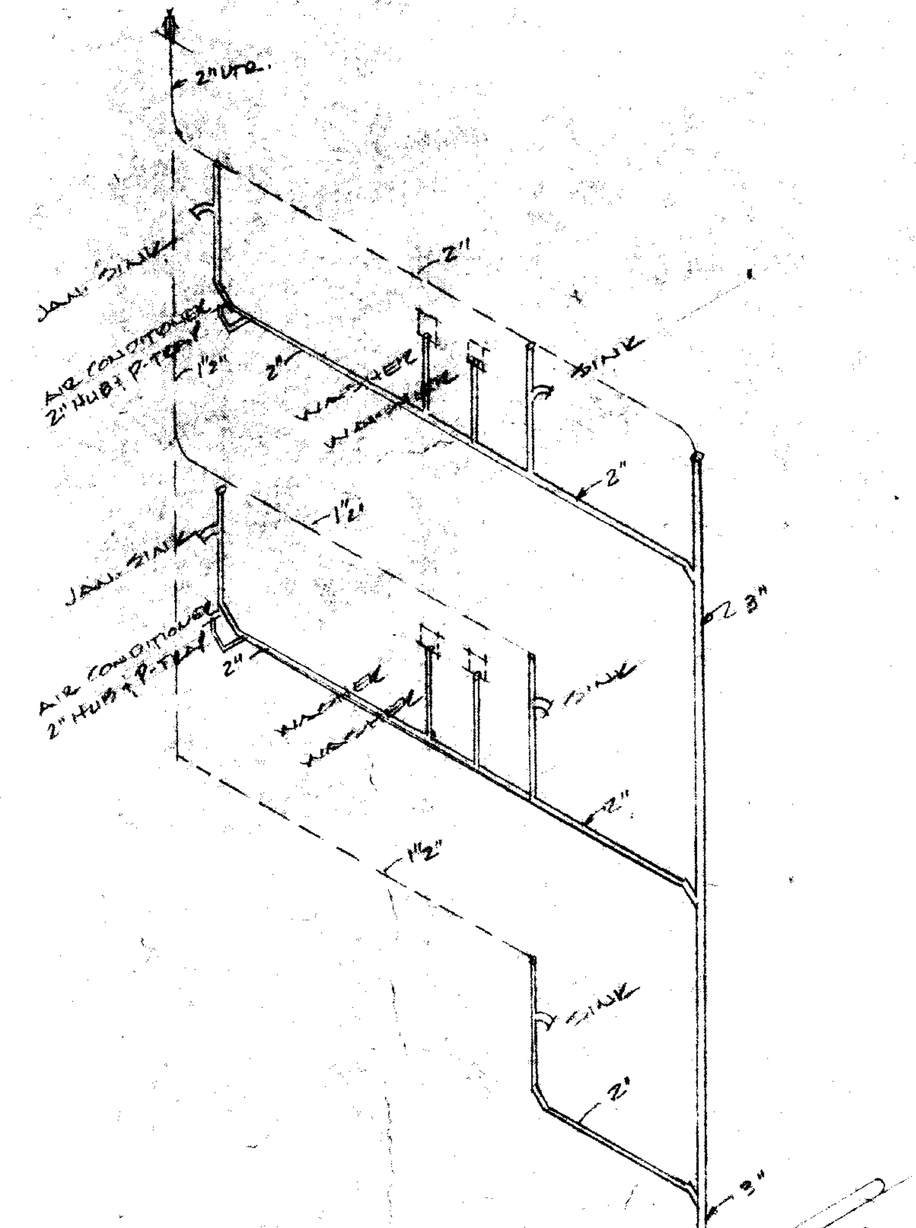
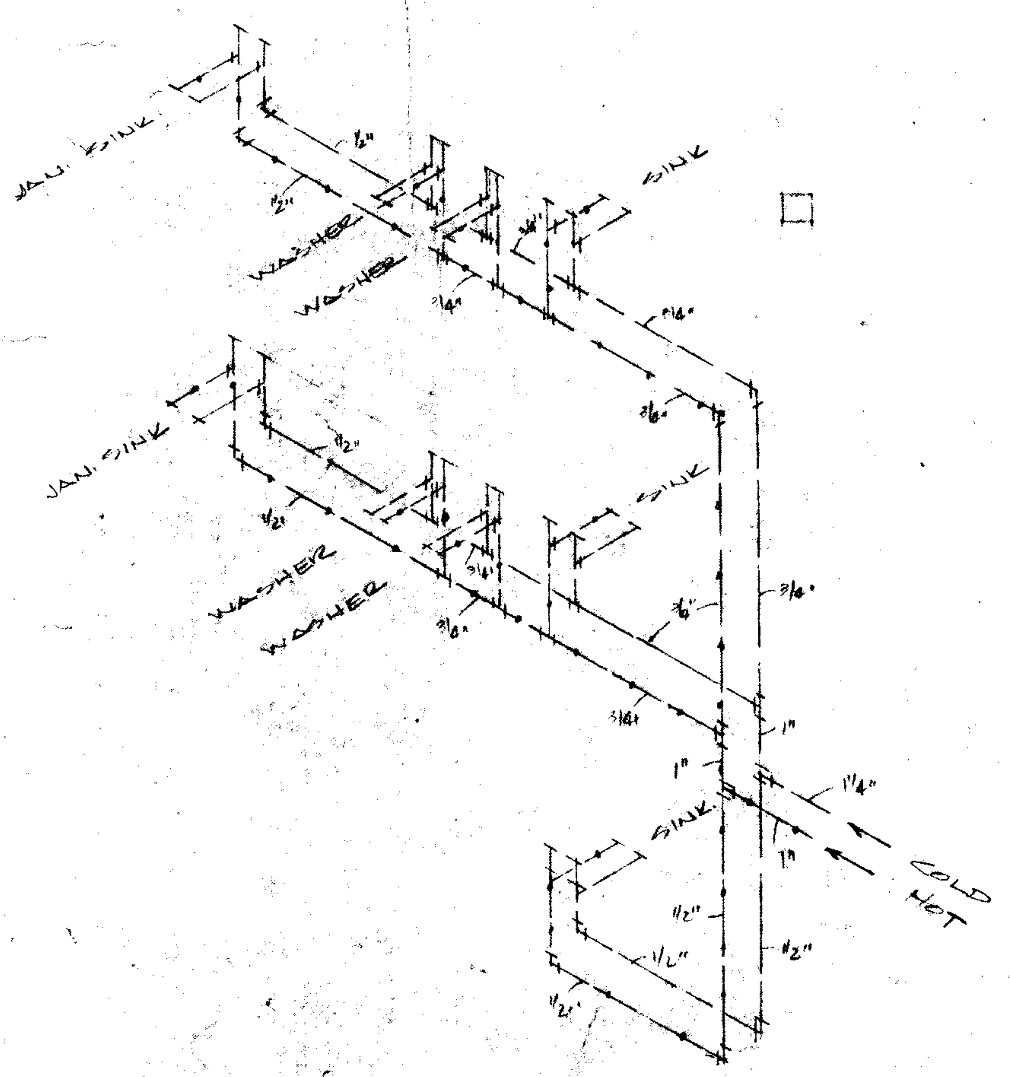
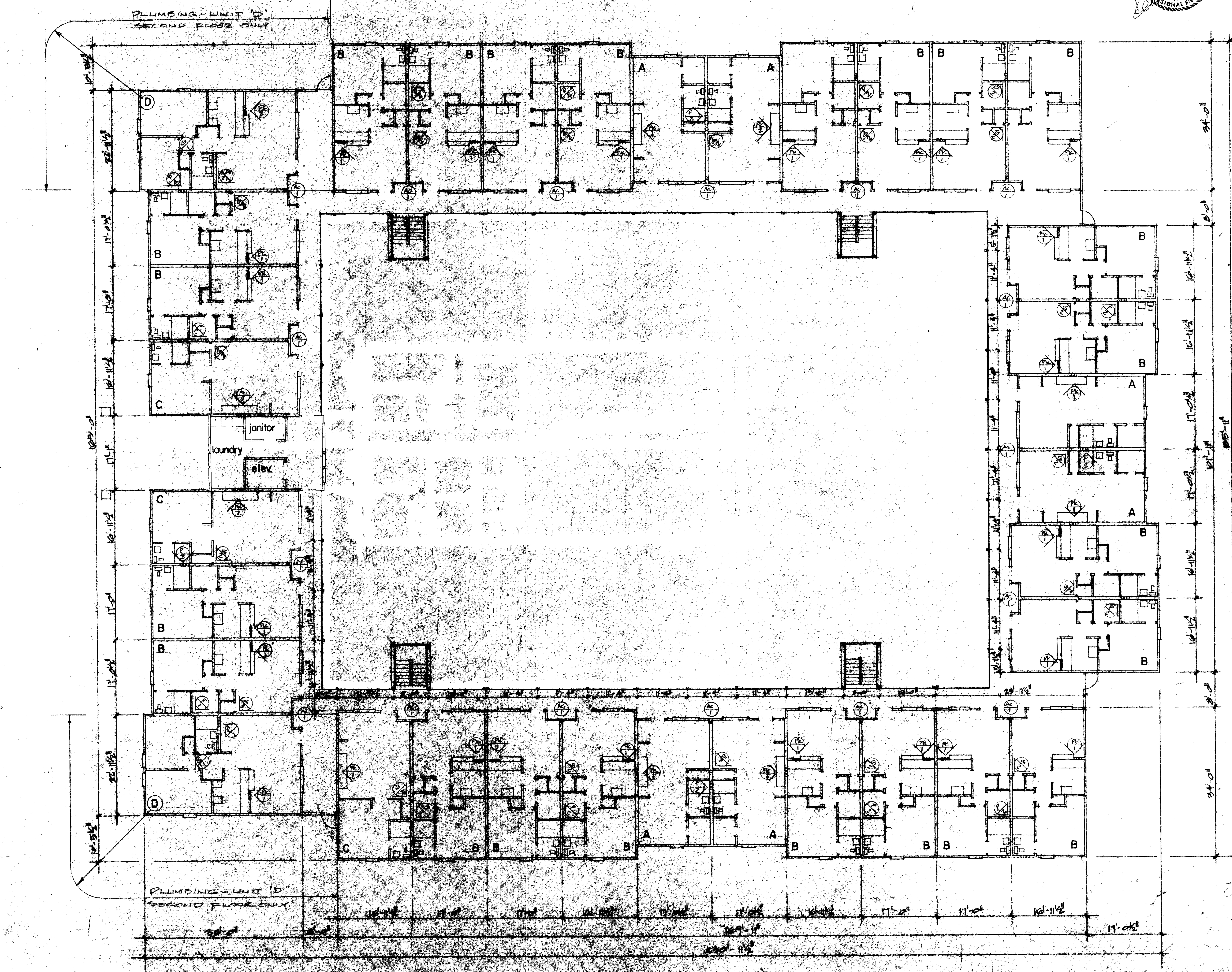


PK 3 JANITOR-LAUNDRY WASTE & VENT



PK 3 JANITOR - LAUNDRY WATER SERVICE



BUILDING PLAN - SECOND & THIRD FL - PLBG.

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texas 78230

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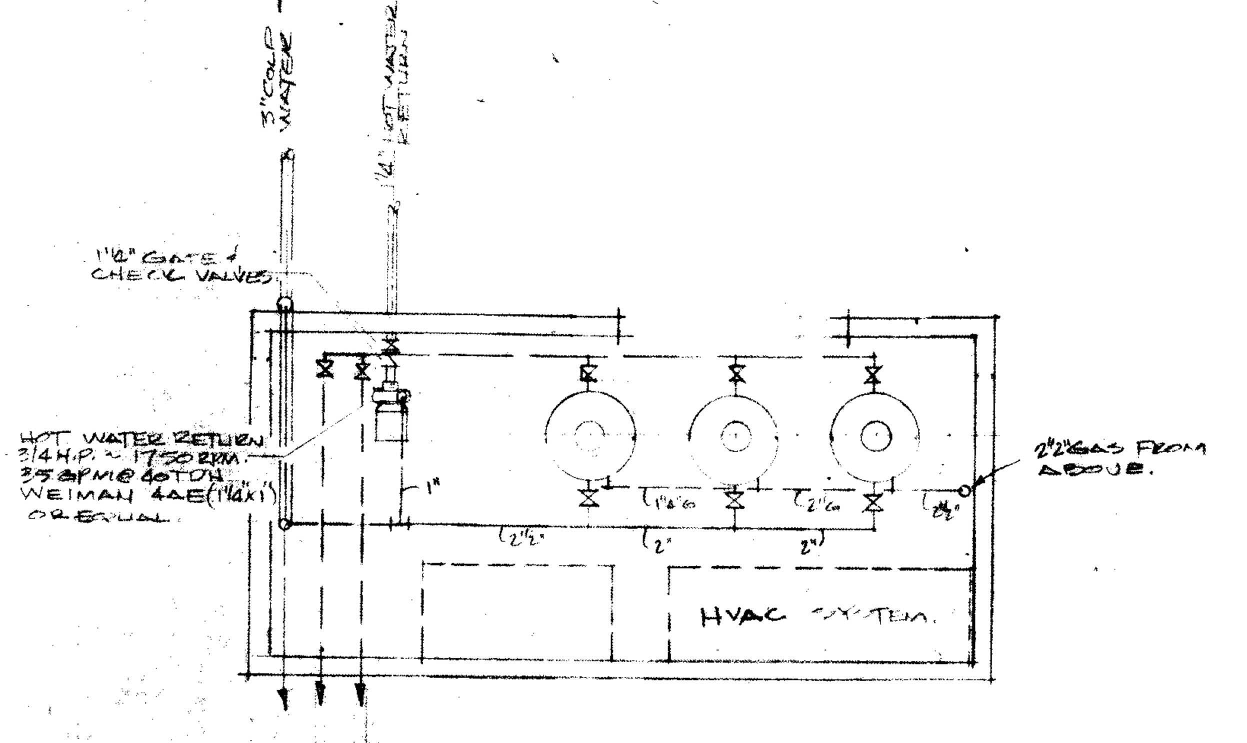
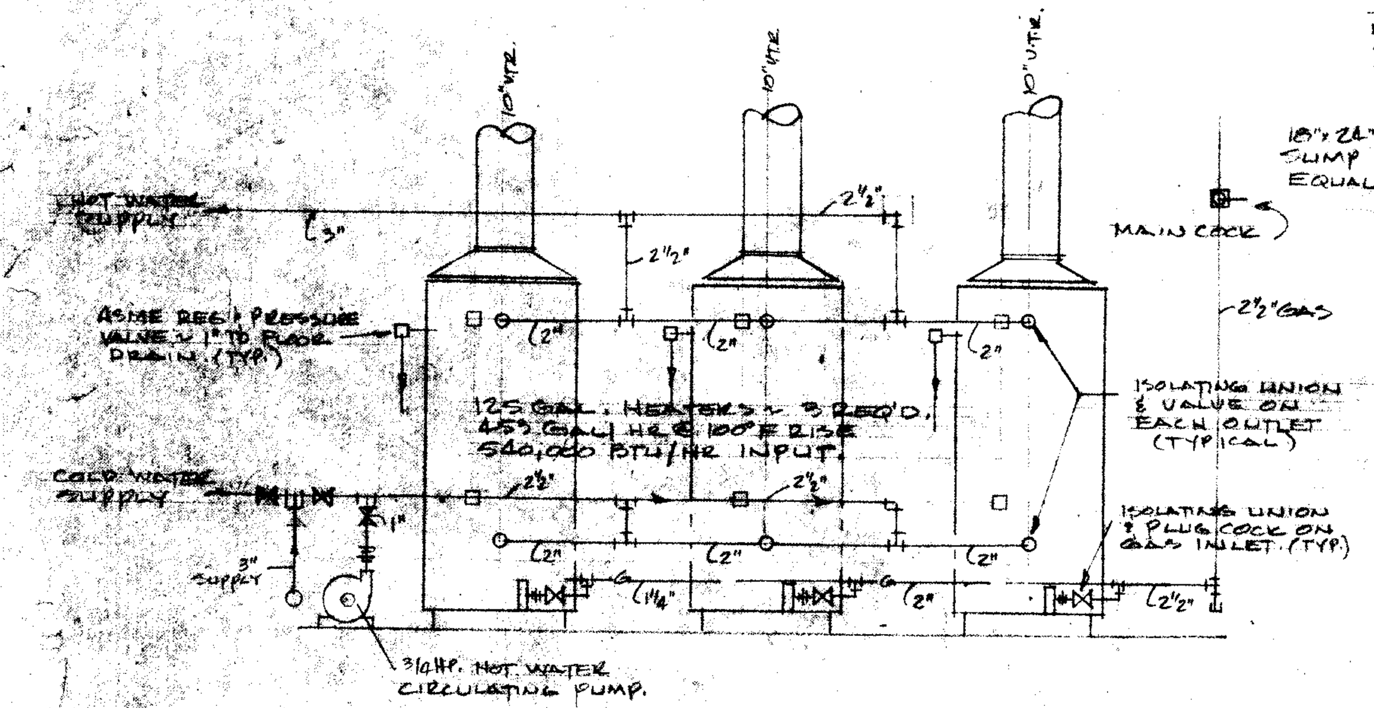
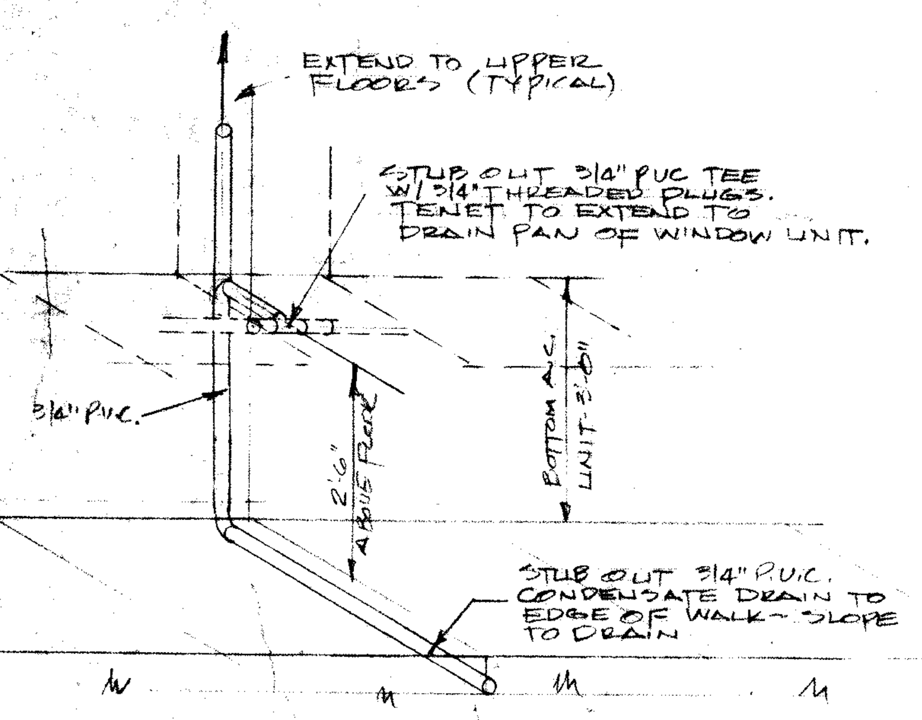
SAN ANTONIO, TEXAS



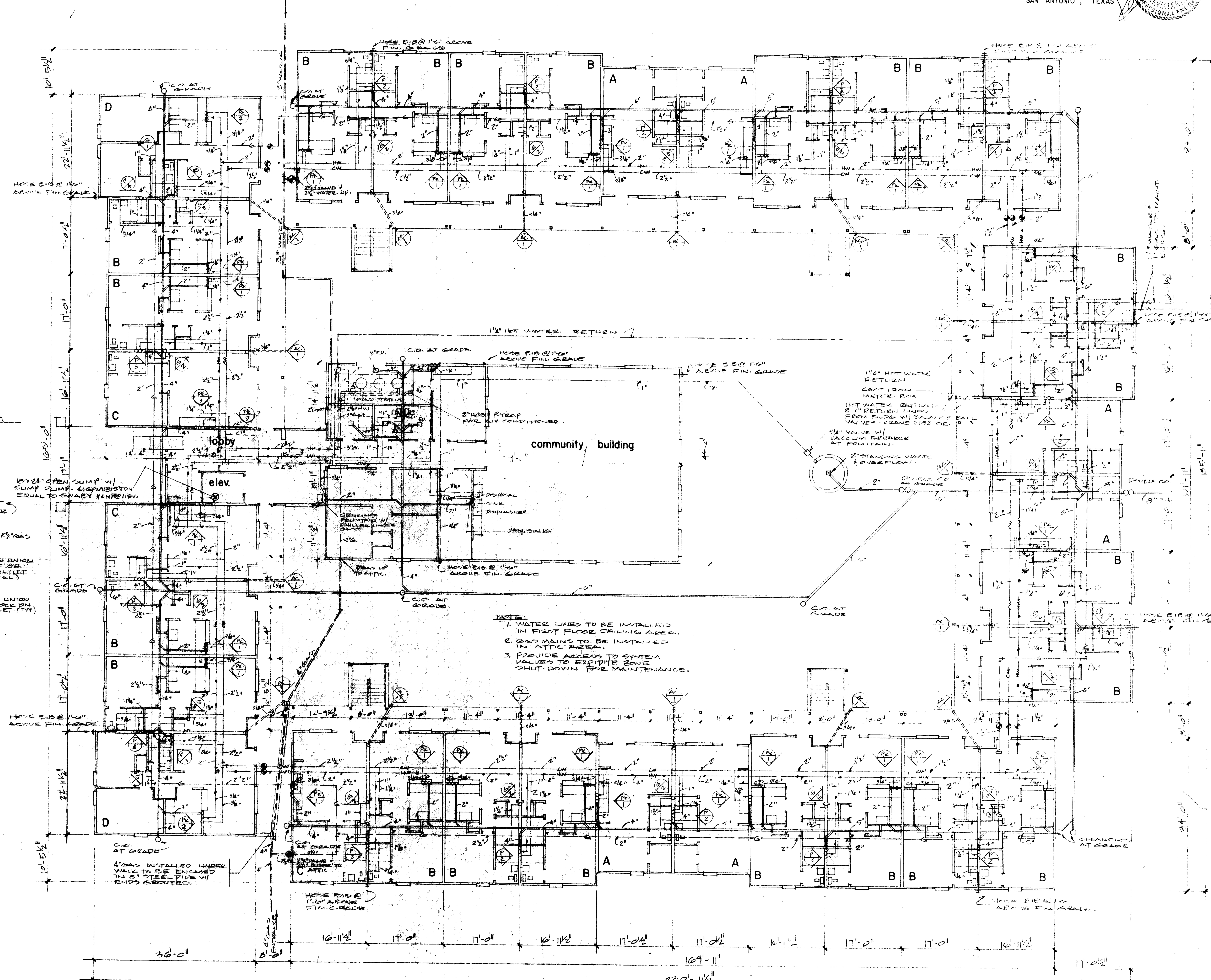
MECHANICAL ROOM & HOT WATER SYSTEM
SCALE: 1/4" = 1'-0"



SCHEMATIC - HOT WATER SYSTEM & PIPING DETAILS.
NO SCALE



WINDOW A.C. CONDENSATE DRAIN DETAIL
NO SCALE



BUILDING PLAN - FIRST FLOOR - PLUMBING
SCALE: 3/32" = 1'-0"

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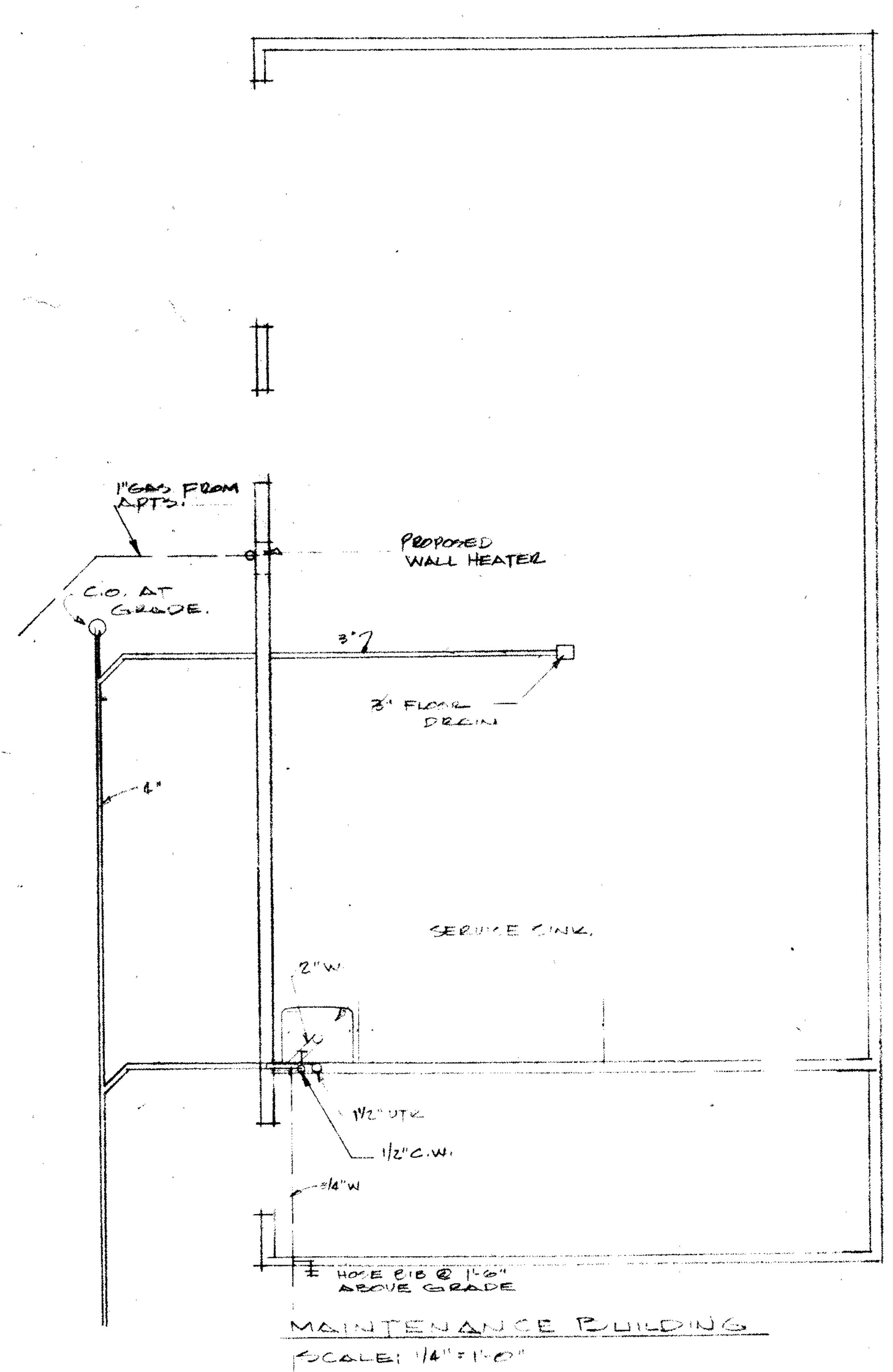
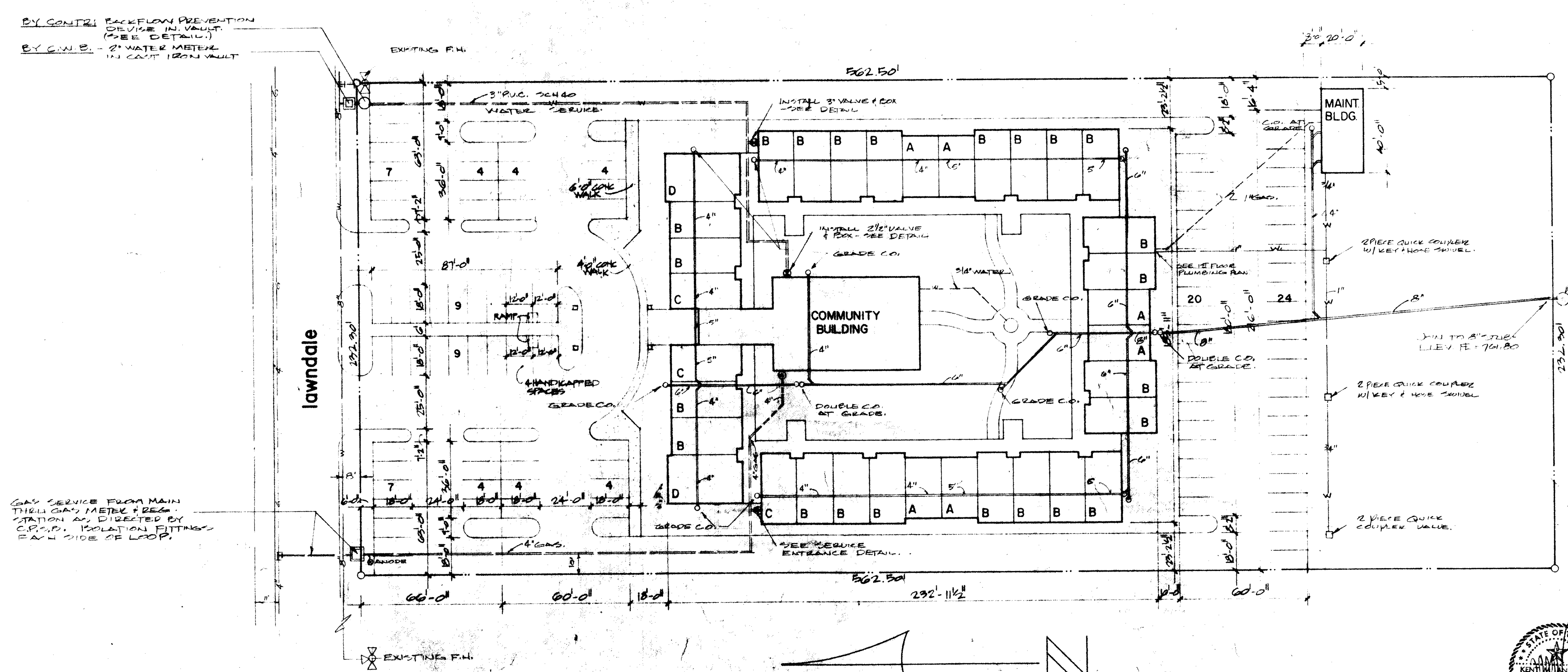
OF 34



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



site plan - utility
SCALE: 1"=30'-0"

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SAN ANTONIO, TEXAS

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elevation
section
head
sill
ALUM. ENTRANCE DOOR DETAILS
SCALE: 3" = 1'-0"
jamb at units B-1, C-1 & D
sill at units B-1, C-1 & D
sill at wood pnl.
TYP. WINDOW
SCALE: 3"=1'-0"
head
jamb
sill
SCALE: 3"=1'-0"
mullion detail at commun. bldg.
SCALE: 3"=1'-0"
mullion detail at units B-1, C-1 & D
sill
EXTERIOR DOORS AT COMMUN. AREAS & MAINT. BLDG.
sill - first floor
sill - 2nd & 3rd floor
EXTERIOR DOOR AT APTS.
SCALE: 3"=1'-0"
head & jamb
INTERIOR FIXED GLASS
SCALE: 3"=1'-0"
head & jamb
TYP. INT. DOOR
head
TYP. WARDROBE DOOR
head
jamb
FOLDING PARTN.
jamb (head & sill sim.)
REMOVABLE ROOM A/C PANEL AT STUCCO
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phone: 512 342 3291
PROJECT
San Antonio Housing Authority
100 UNIT ELDERLY PROJECT
LAWNDALE DRIVE
HUD PROJECT NO TEX 59-0007-004
OWNER
PROJECT NUMBER: 7823
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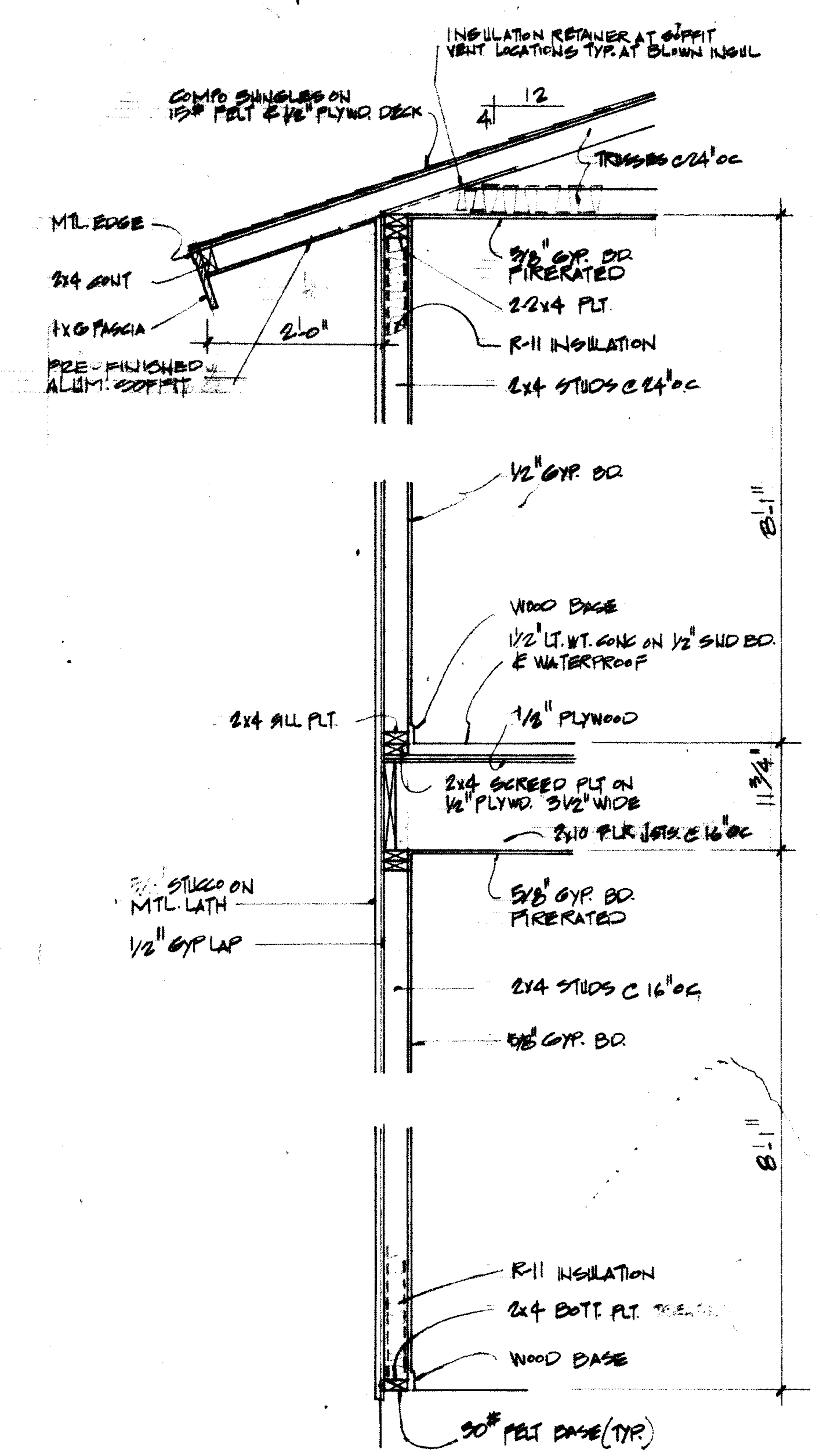
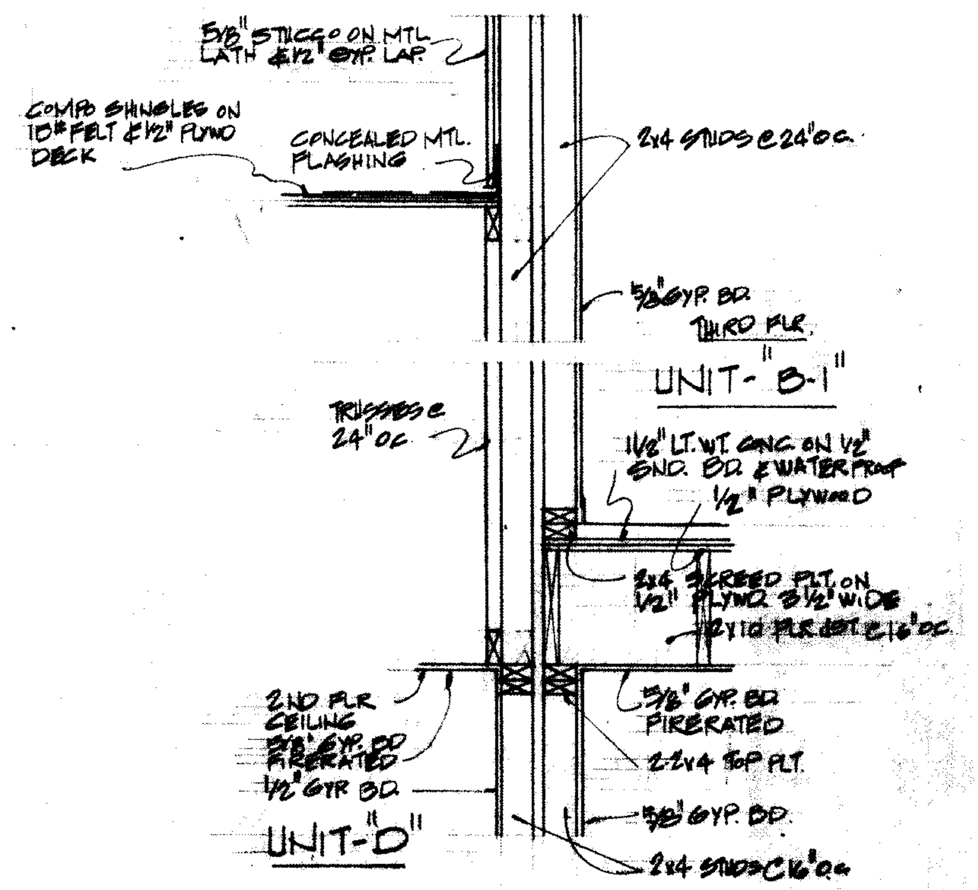


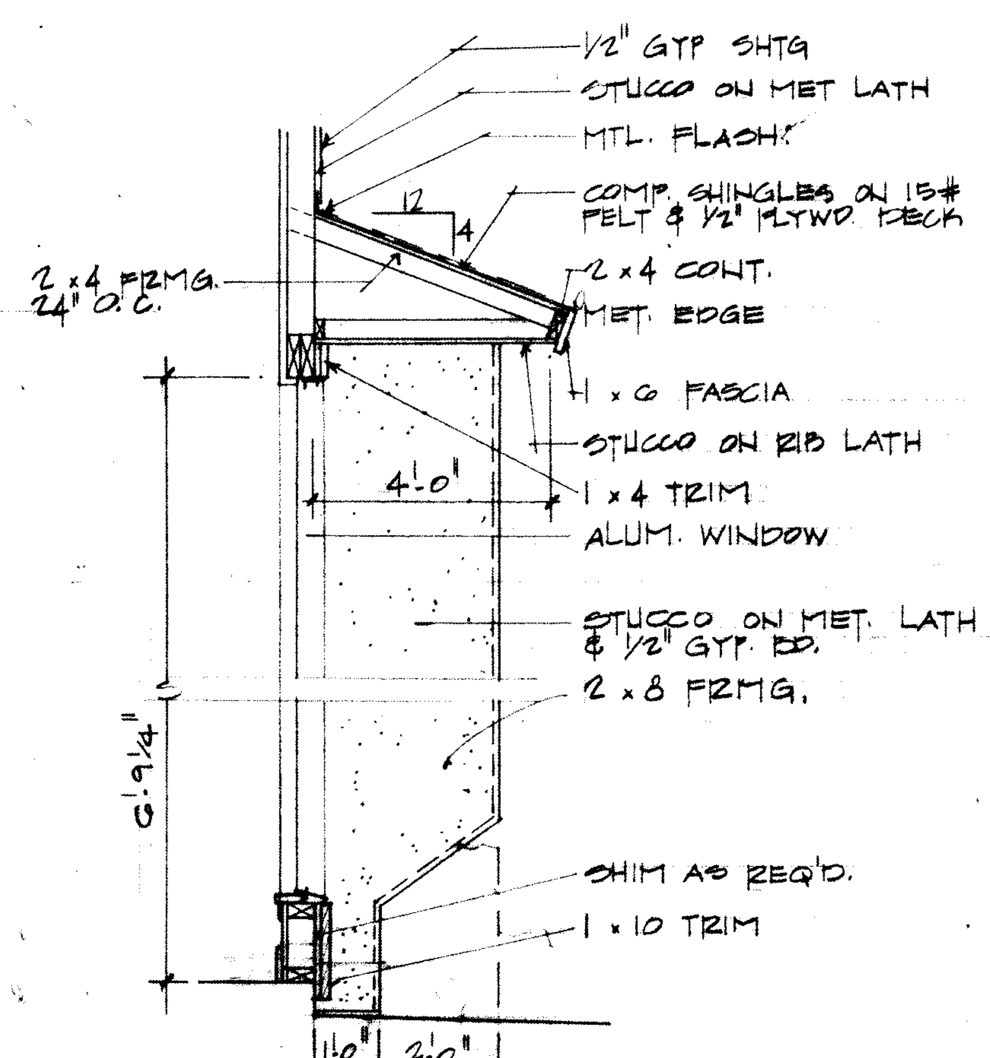
2 story wall section

SCALE: 3/4" = 1'-0"



partial wall section between units D & B-1

SCALE: 3/4" = 1'-0"



wing wall & roof at comm. room ext. entrance

SCALE: 3/4" = 1'-0"

ROOM FINISH SCHEDULE

UNITS					
room	floor	base	walls	ceiling hgt.	ceiling mtl.
LIVING	CARPET	WOOD	GYP. BD.	8'-0"	GYP. BD.
DINING	CARPET	WOOD	GYP. BD.	8'-0"	GYP. BD.
KITCHEN	VINYL ASB TILE	WOOD W/ SHOE MOULD	GYP. BD.	8'-0"	GYP. BD.
BEDROOMS	CARPET	WOOD	GYP. BD.	8'-0"	GYP. BD.
BATHS	CERAMIC TILE	CER. TILE	GYP. BD.	7'-0"/8'-0"	GYP. BD.
CLOSETS & LINEN	CARPET	WOOD	GYP. BD.	7'-0"/8'-0"	GYP. BD.
STORAGE UNIT C&D / UNIT A&B	CARPET / VINYL ASB. TILE	WOOD / WD. W/ SHOE	GYP. BD.	7'-0"/8'-0"	GYP. BD.
HALLS	CARPET	WOOD	GYP. BD.	7'-0"	GYP. BD.
LOBBY, COMM. BLDG. & MAINT. BLDG.					
COMM. ROOM	VINYL ASB TILE	WOOD W/ SHOE MOULD	VINYL COVER OVER GYP. BD.	8'-0"	GYP. BD.
OFFICE #1, #2 & #3	" "	" "	GYP. BD.	"	"
RECEPTION	" "	" "	GYP. BD.	"	"
ARTS & CRAFTS	" "	" "	GYP. BD.	"	"
ARTS & CRAFTS STO.	" "	" "	GYP. BD.	"	"
ELEV. LOBBY	" "	" "	VINYL COVER OVER GYP. BD.	"	"
MEN-WOMEN	" "	" "	GYP. BD.	"	"
JANITOR	" "	" "	GYP. BD.	"	"
LAUNDRY	" "	" "	GYP. BD.	"	"
HALL	VINYL ASB TILE	" "	VINYL COVER OVER GYP. BD.	"	"
MECHANICAL	EXPOSED CONC.	WOOD	GYP. BD.	"	"
A/C ROOM	RAISED PLATFORM	WOOD	GYP. BD.	"	"
MAINT. BLDG. MAINT. ROOM	EXPOSED CONC.	WOOD	GYP. BD.	"	"
MAINT. BLDG. COMB. MATL. & STOR. RM	EXPOSED CONC.	WOOD	GYP. BD.	"	"
ELEV. EQUIP.	EXPOSED CONC.	WOOD	GYP. BD.	"	"
COMM. RM. STO.	EXPOSED CONC.	WOOD	GYP. BD.	8'-0"	GYP. BD.

DOOR SCHEDULE

UNITS / LOBBY & COMM. BLDG.			
no.	size	description	detail
1	3'-0" x 6'-8" x 1 3/4"	SOLID CORE	
2	3'-0" x 6'-8" x 1 1/8"	SCREEN DOOR	
3	3'-0" x 6'-8" x 1 3/8"	HOLLOW CORE	UNDER CUT DR. DRS FOR R/A
4	2'-8" x 6'-8" x 1 3/8"	HOLLOW CORE	UNDER-CUT DR. DRS FOR R/A
5	2'-0" x 6'-8" x 1 3/8"	HOLLOW CORE	
6	1'-8" x 6'-8" x 1 3/8"	HOLLOW CORE	
7	1'-8" x 5'-4" x 1 3/8"	HOLLOW CORE	
8	3'-0" x 7'-0" R.O.	FOLDING DOOR	
9	4'-4" x 7'-0" R.O.	" "	
10	5'-0" x 8'-0" R.O.	" "	
11	7'-0" x 7'-0" R.O.	" "	
12	7'-8" x 7'-0" R.O.	" "	
13	8'-4" x 8'-0" R.O.	" "	
14	OMITTED		
15	PR-3'-0" x 6'-8" x 1 3/4"	SOLID CORE	2-24x30 REG. EACH DOOR
16	PR-2'-6" x 6'-8" x 1 3/8"	HOLLOW CORE	
17	PR-3'-0" x 6'-8" x 1 3/4"	SOLID CORE	
18	3'-0" x 6'-8" x 1 3/4"	S.C. FRENCH DR.	
19	4'-2" x 7'-0" R.O.	FOLDING DOOR	
20	3'-0" x 7'-0" x 1 3/4"	NARROW STILE ALUM. DOOR	
21	17'-4" x 8'-0"	FOLDING DOOR	
22	7'-11" x 8'-0"	" "	
23	19'-4" x 8'-0"	" "	
24			
25			
26			
27			
28			

WINDOW SCHEDULE

UNITS / LOBBY & COMM. BLDG.			
A	PR. 3^0 x 5^0	ALUM. S.H.	SCREEN
B	PR 2^8 x 5^0	" "	"
C	3^0 x 5^0	" "	"
D	3^3 x 2^0	ALUM. S.H.	SCREEN
E	3^0 x 6^0	ALUM. S.H.	SCREEN
F	PR 3^0 x 3^0	ALUM. S.H.	SCREEN

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environmental planning • urban design • architecture
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PROJECT
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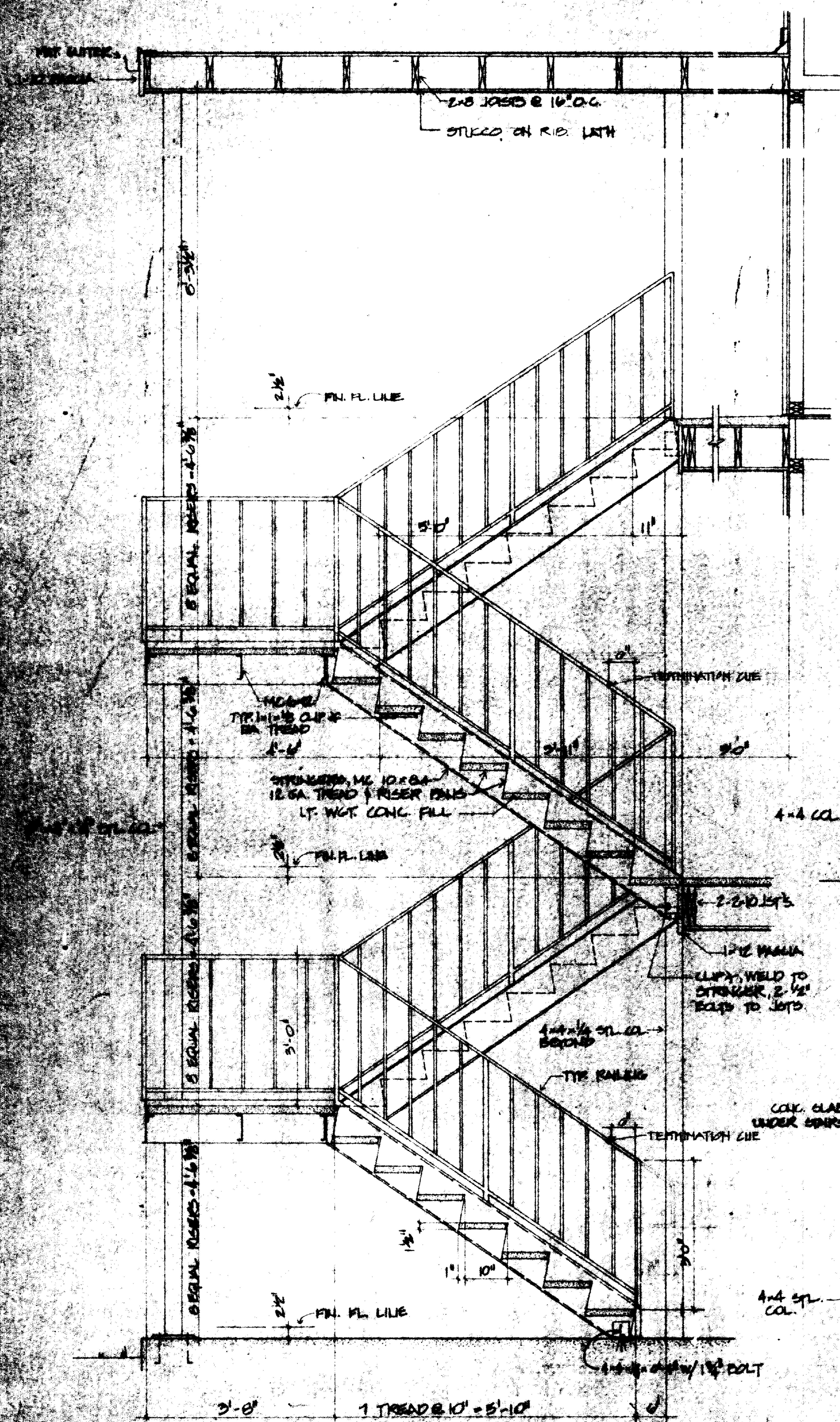
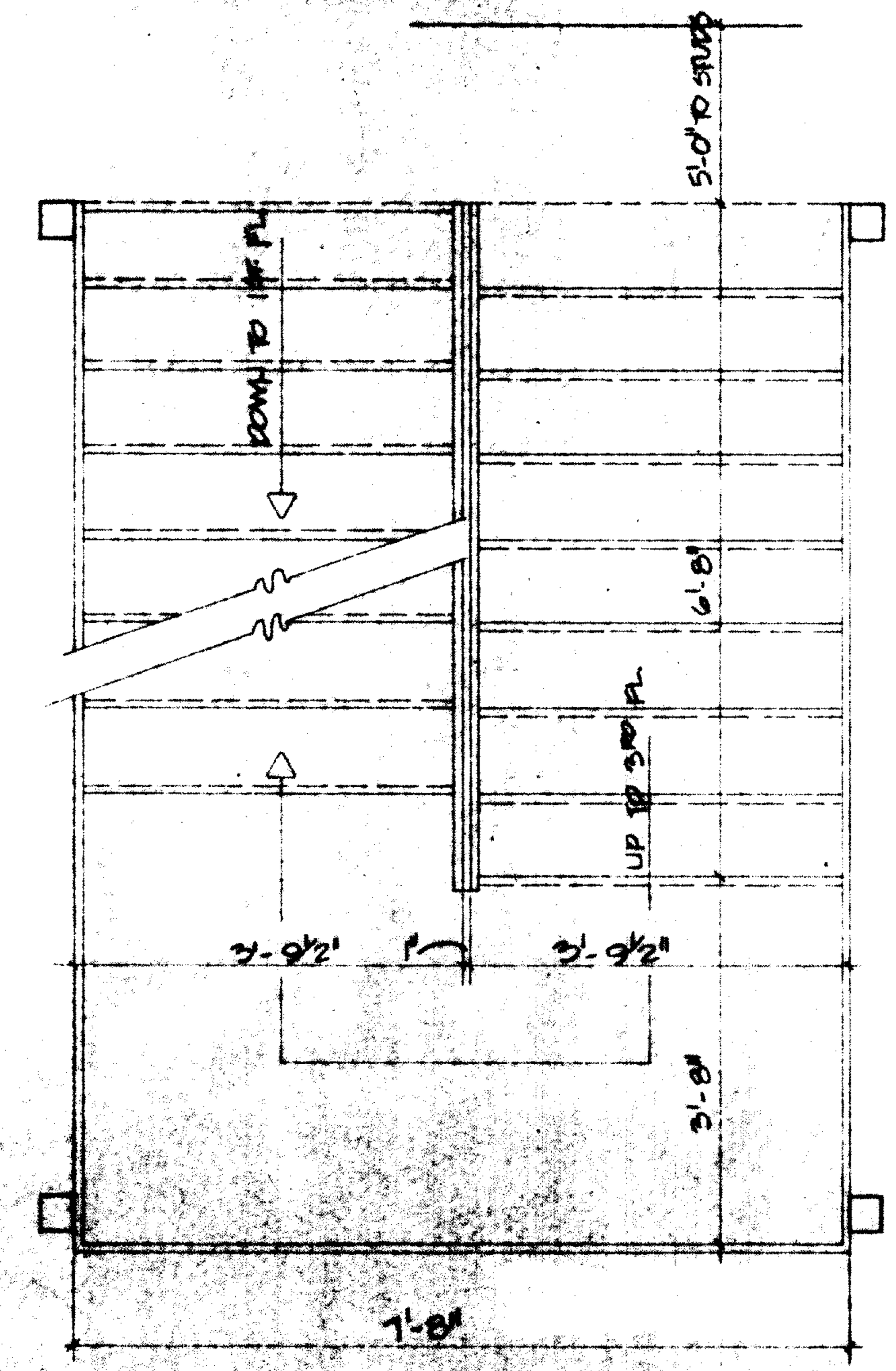
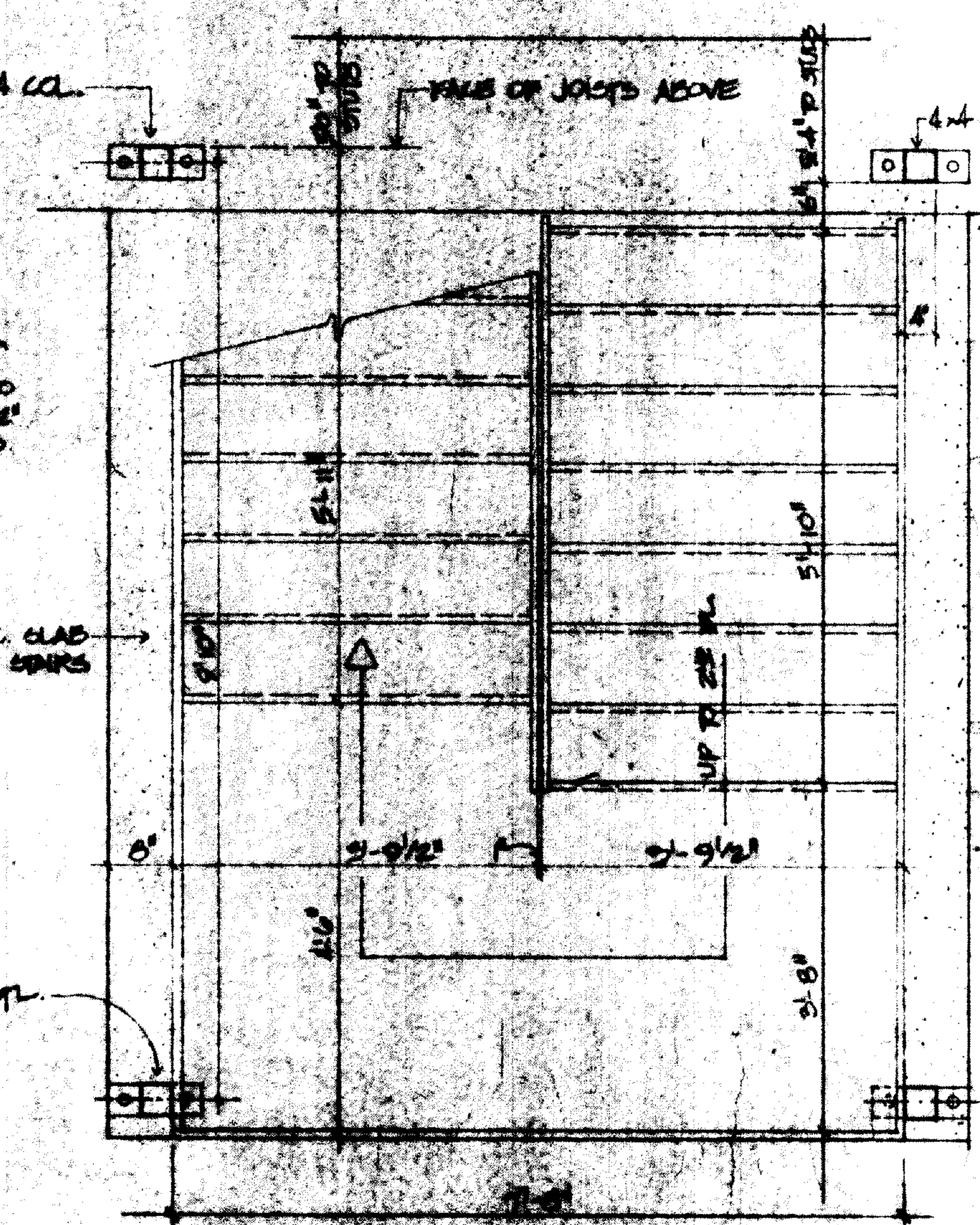


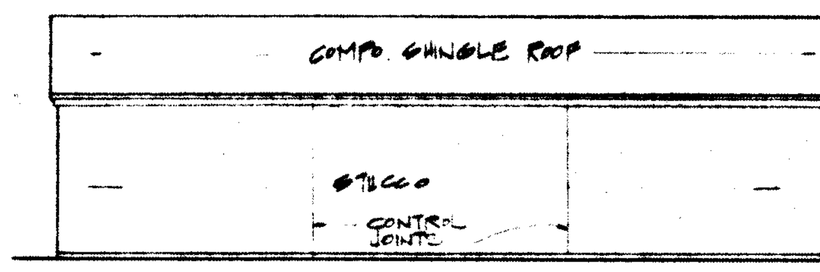
TYPICAL STAIR SECTION



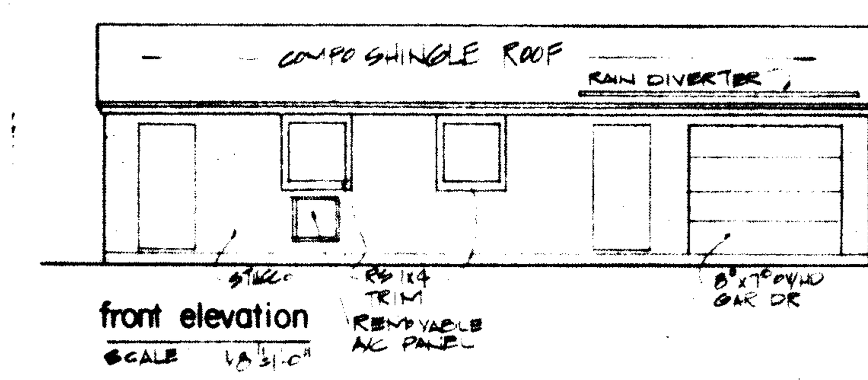
STAIR PLAN · SECOND FLOOR



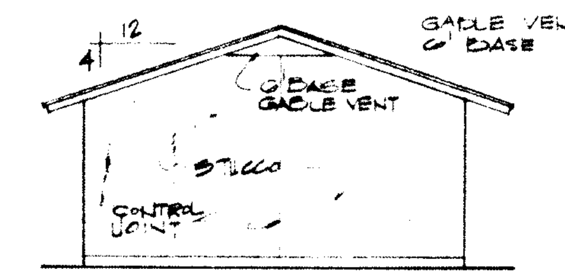
STAIR PLAN · FIRST FLOOR



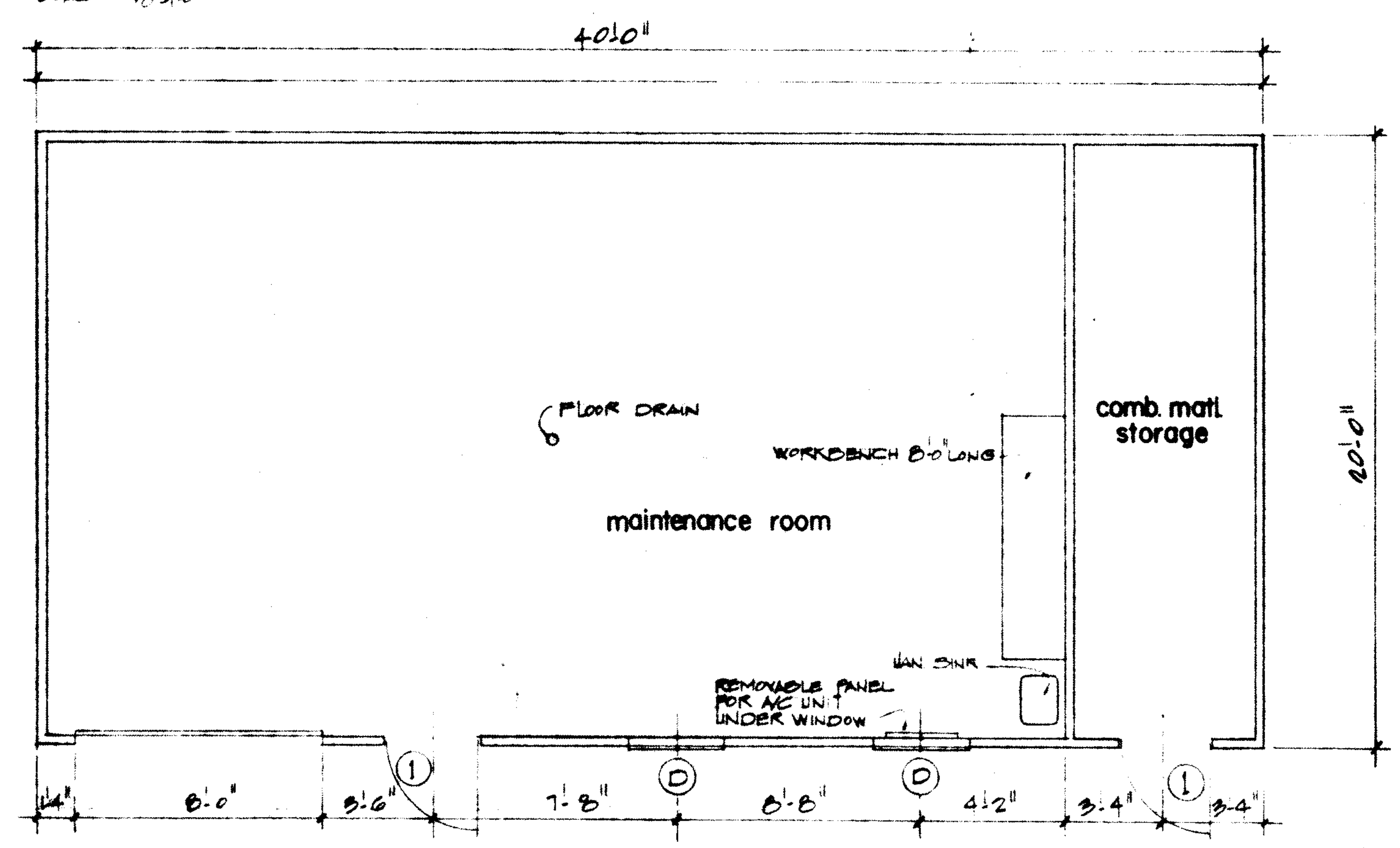
rear elevation



front elevation

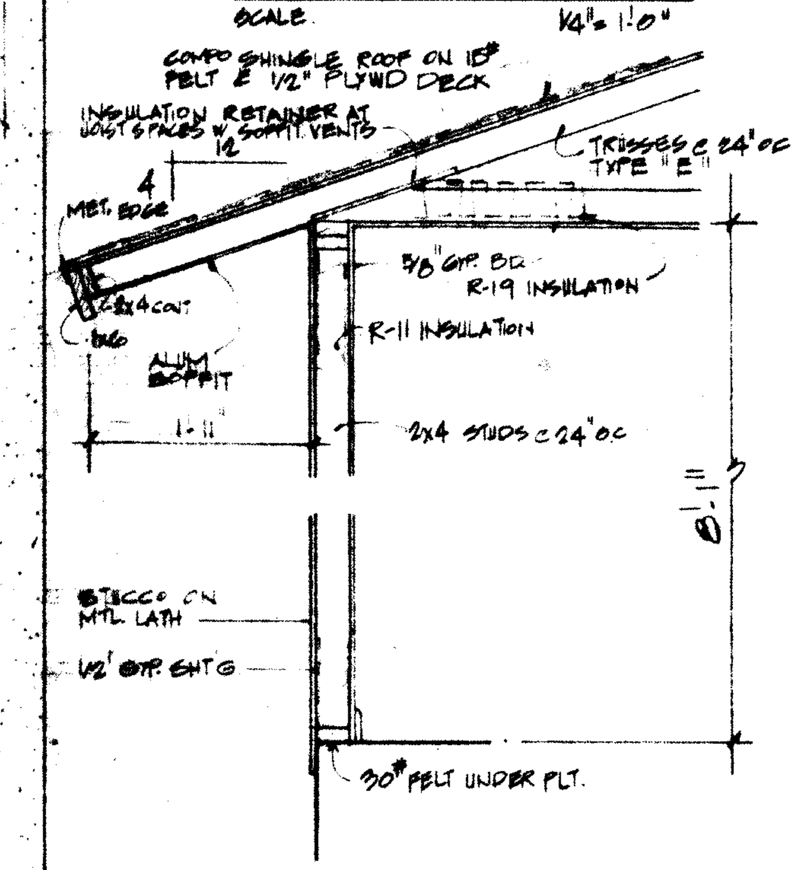


right & left side elevs. typ.



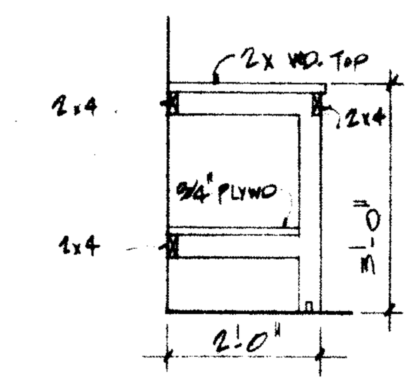
MAINTENANCE BUILDING

SCALE 1/8" = 1'-0"



MAINT. BLDG. WALL SECT.

SCALE 3/4" = 1'-0"



WORK BENCH DET

SC. 1/2" = 1'-0"

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PROJECT
San Antonio Housing Authority
100 UNIT ELDERLY PROJECT
LAWNDALE DRIVE
HUD PROJECT NO TEX 59-0007-004
OWNER

PROJECT NUMBER 7820
DRAWN
CHECKED
APPROVED
DATE 3-21-78
REVISED

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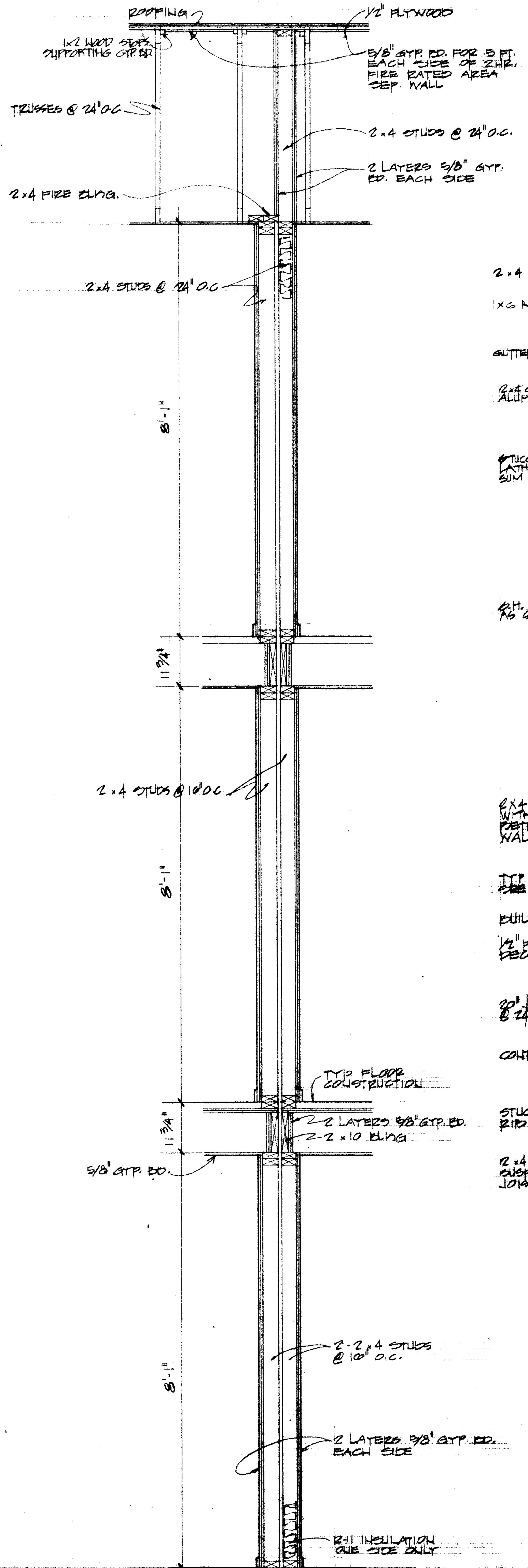
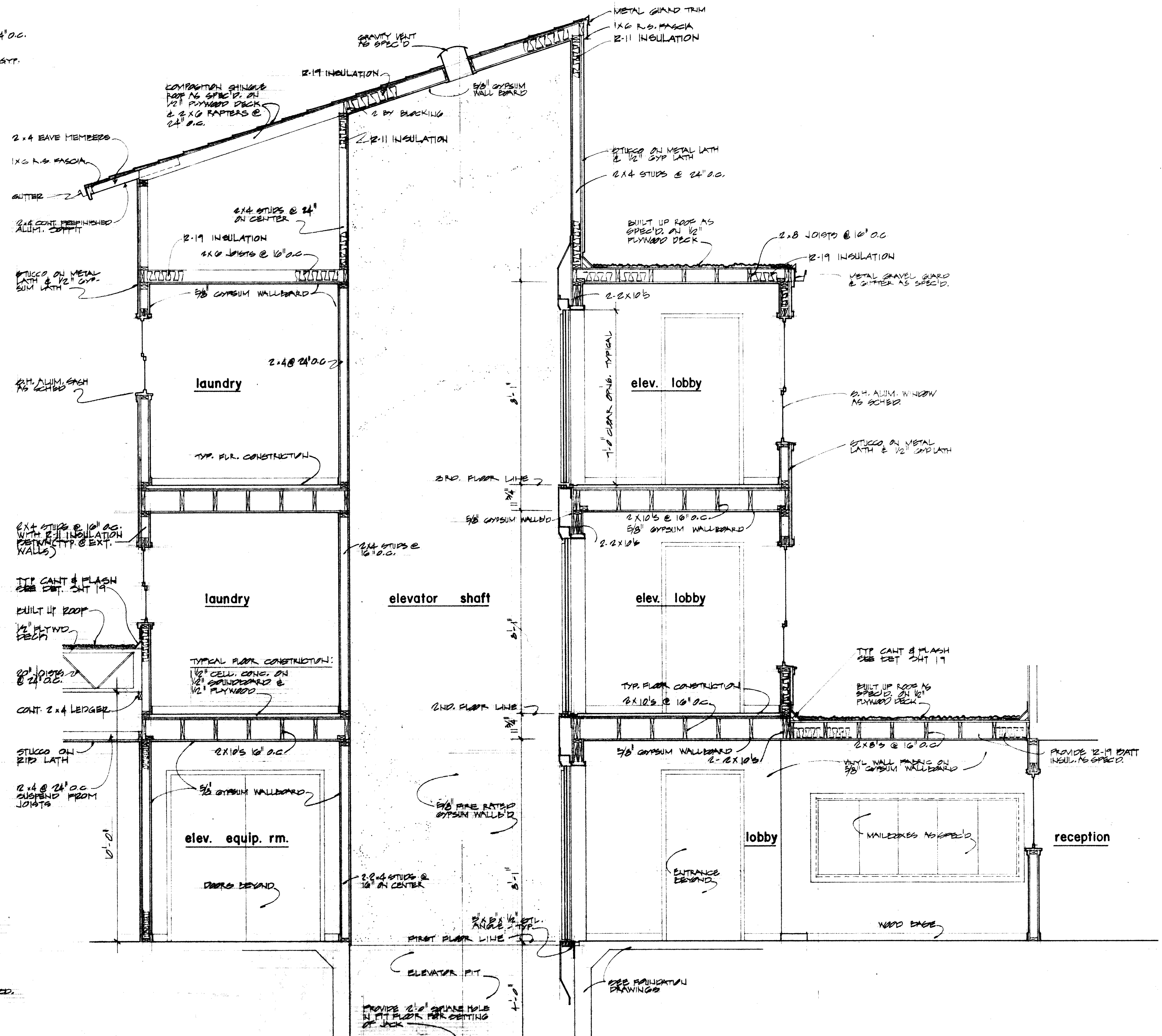


TWO HOUR FIRERATED AREA SEP. WALL

SCALE: 3/4" = 1'-0"



SECTION THRU ELEVATOR SHAFT AND LOBBY

SCALE: 1/2" = 1'-0"

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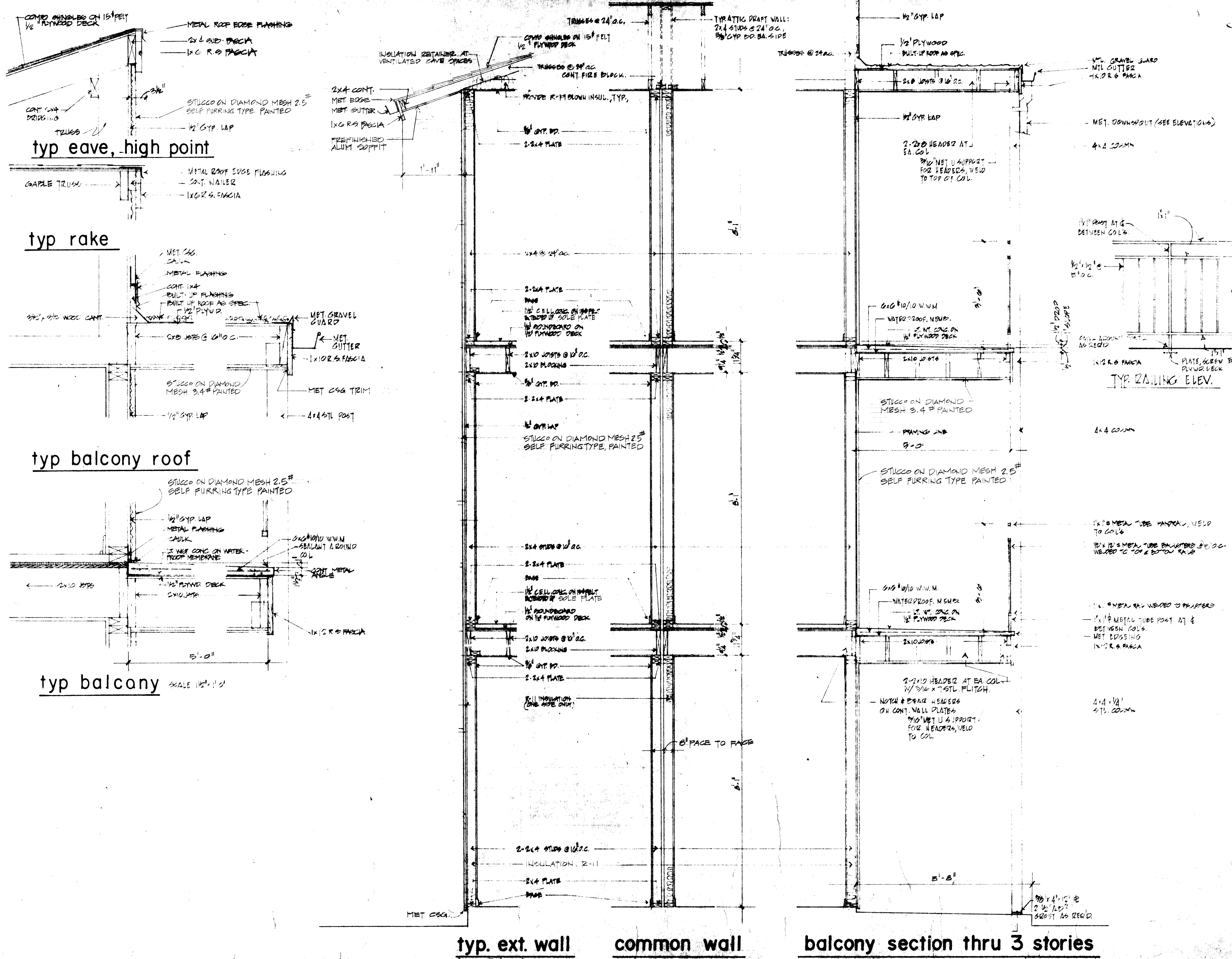

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LAWNDALE DRIVE
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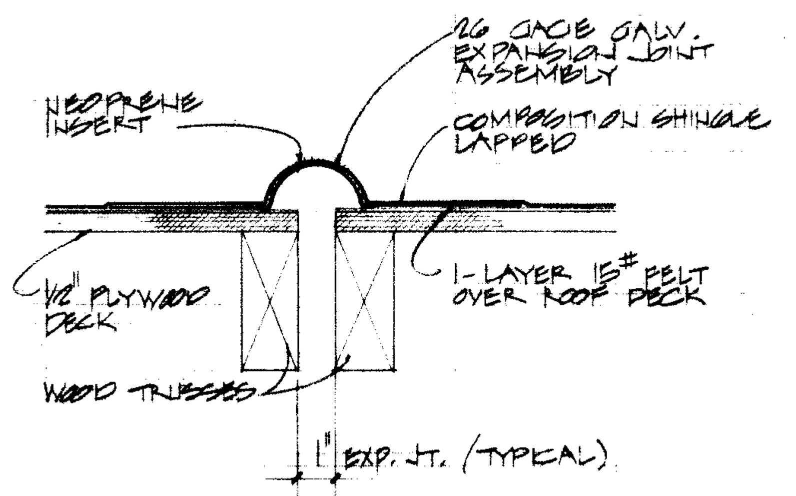
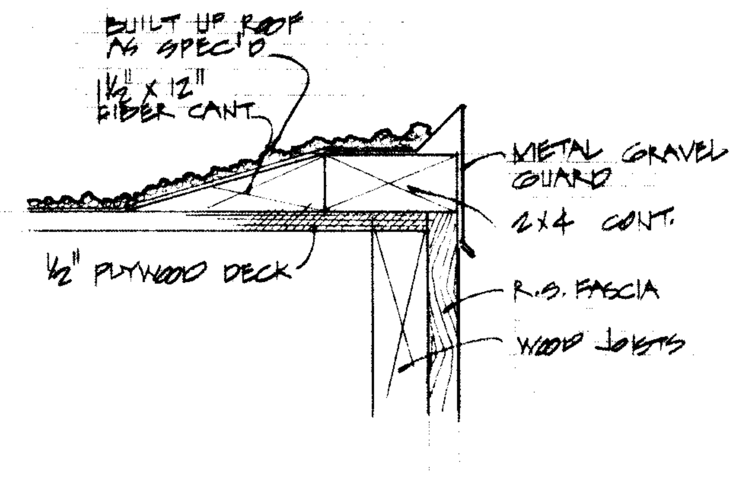
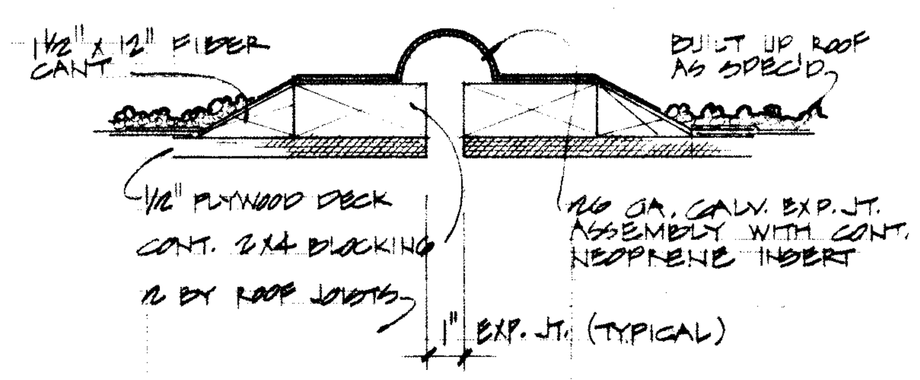


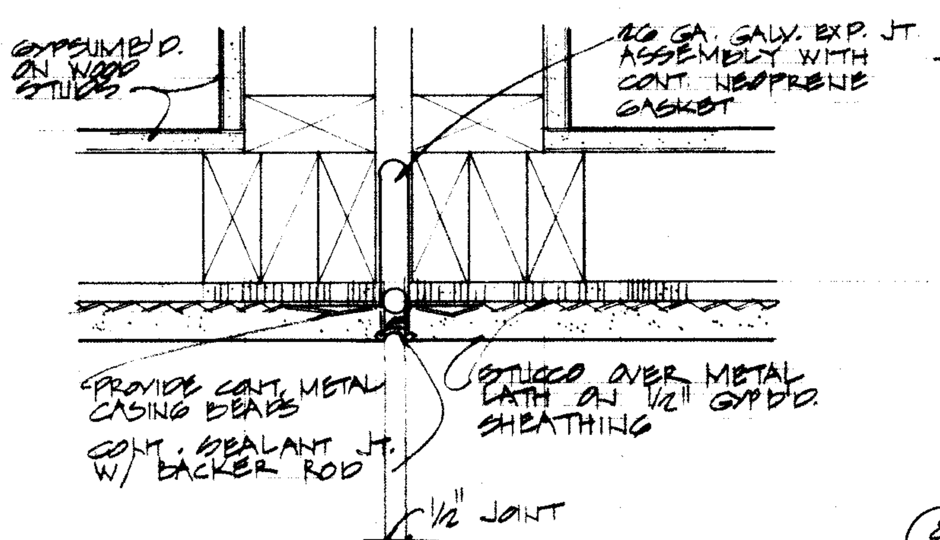
1/18 expansion joint thru roof



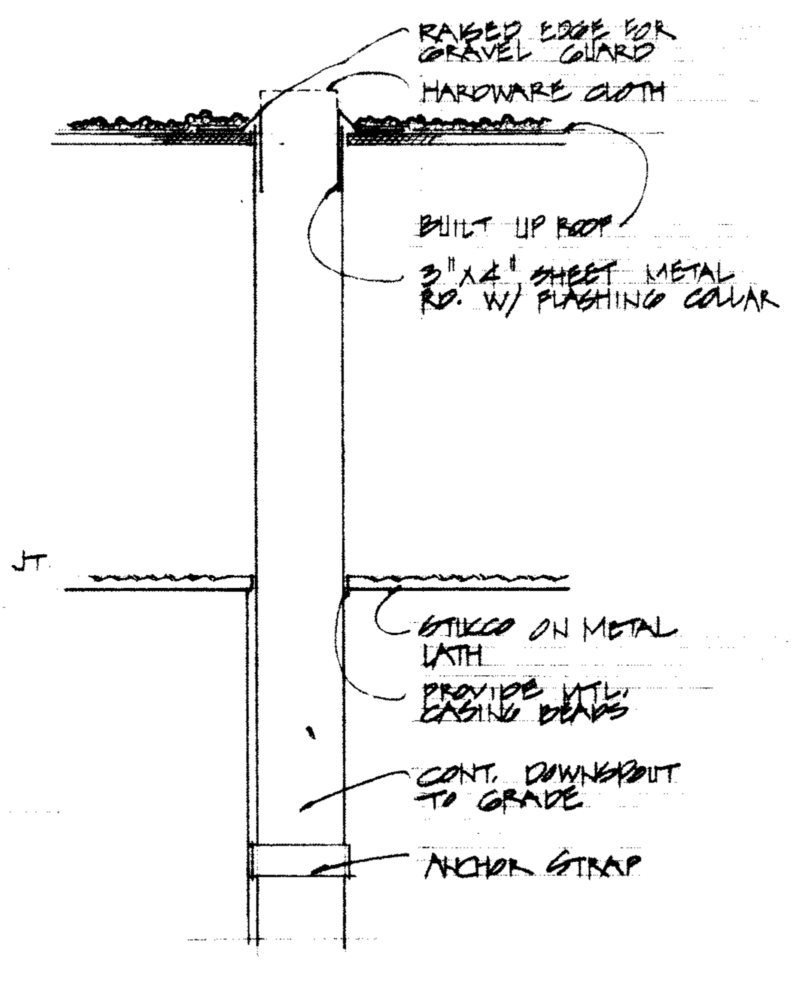
7/18 eave detail



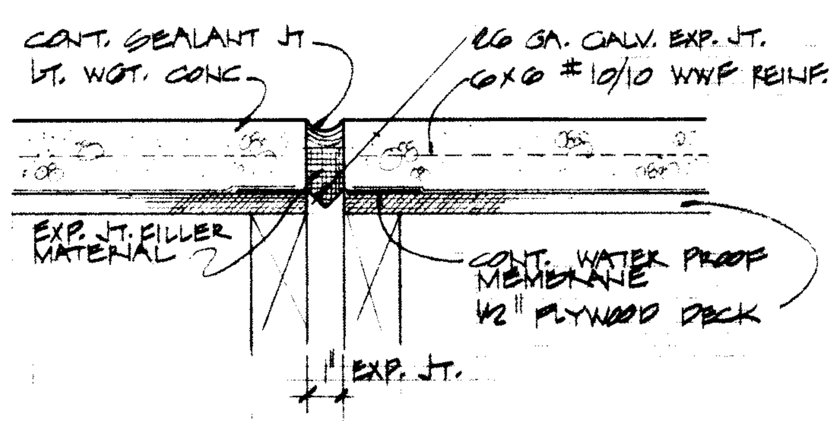
2/18 expansion joint thru balcony roof



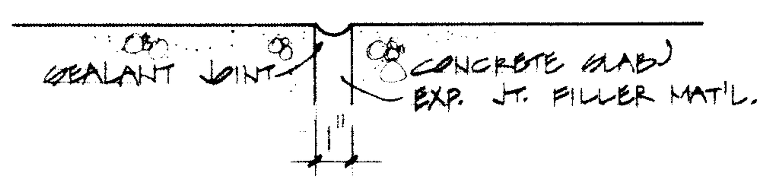
3/18 expansion joint - stucco wall



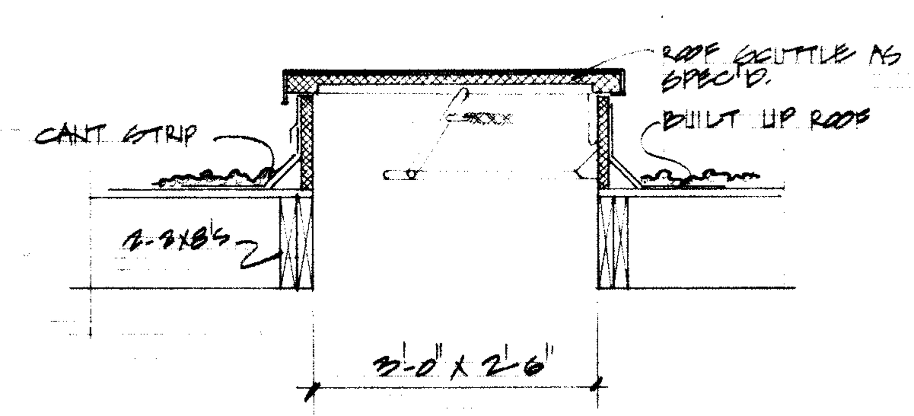
8/18 roof drain - porte corchere



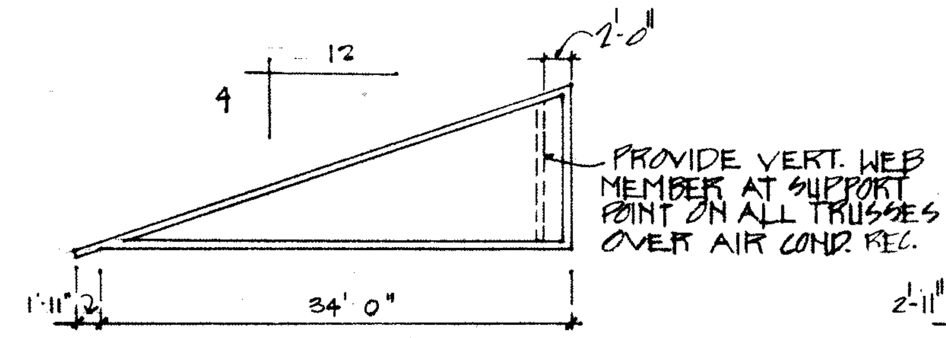
4/18 expansion joint thru balcony walk



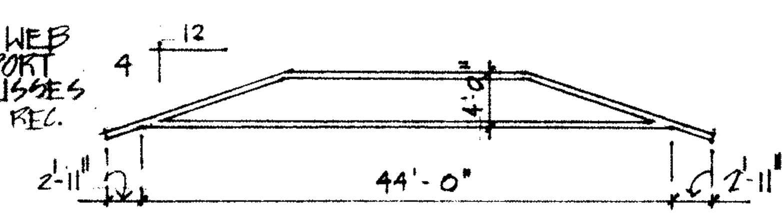
5/18 expansion joint thru slab



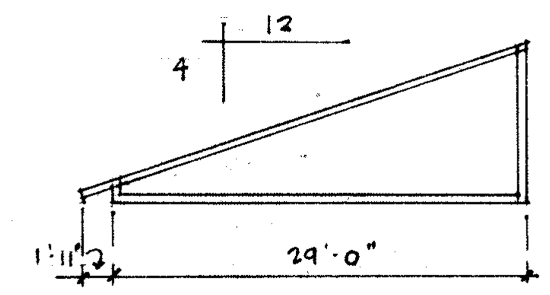
6/18 roof scuttle



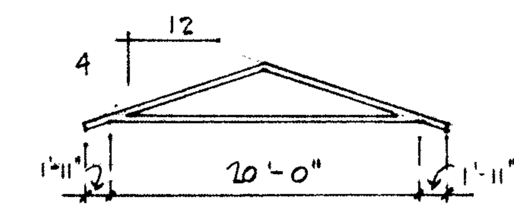
truss type "A"



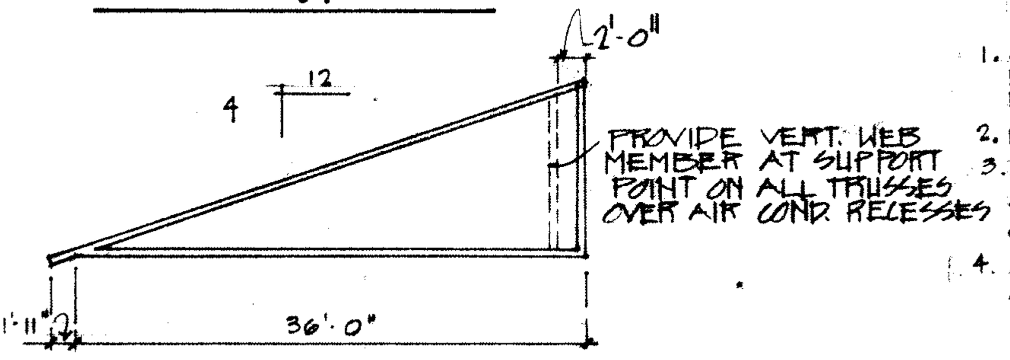
truss type "D"



truss type "B"



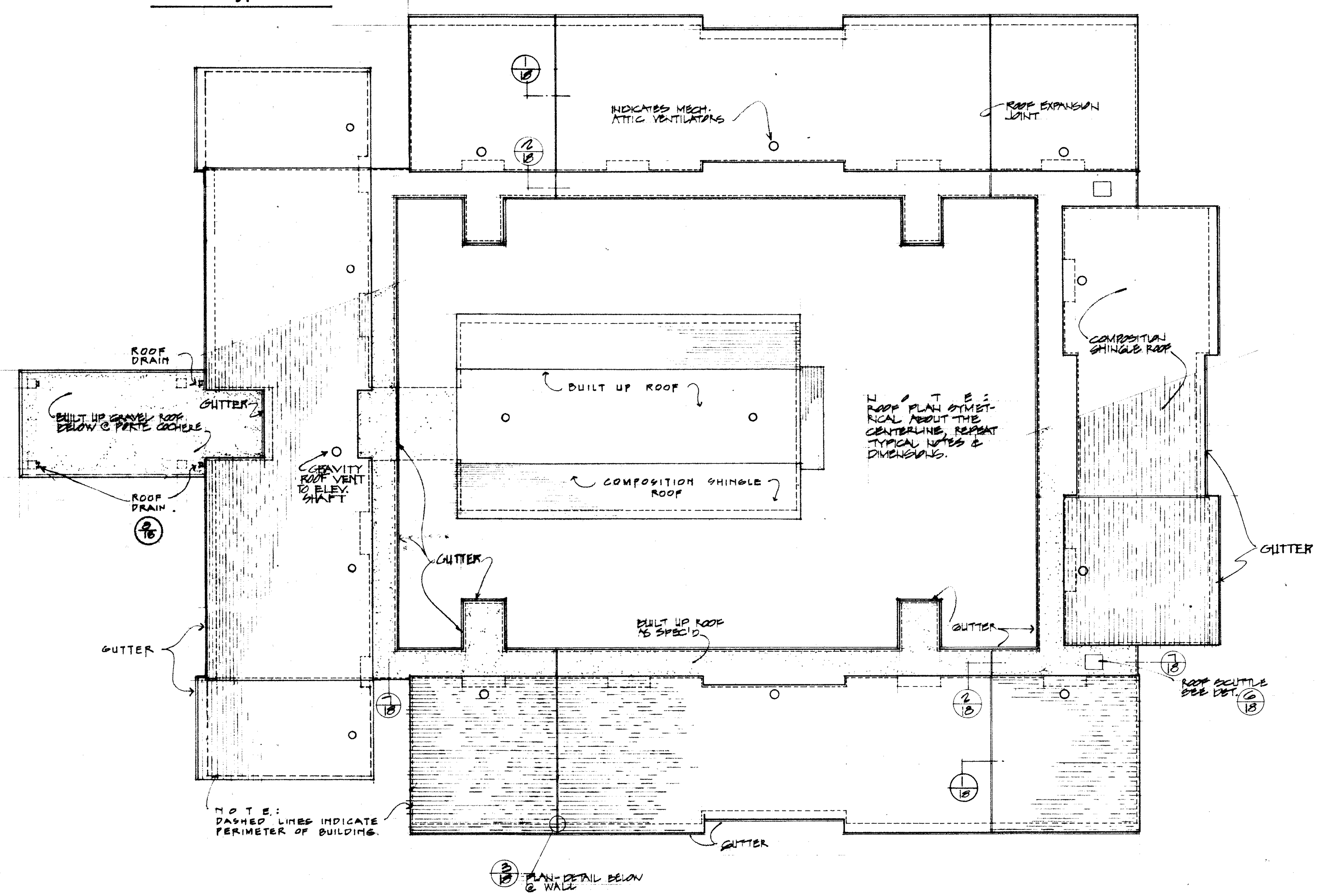
truss type "E"



truss type "C"

TRUSS NOTES:

1. ALL ROOF TRUSSES ARE TO BE SHOP FABRICATED AND THE DESIGN APPROVED BY THE DESIGN ARCHITECT
2. PROVIDE HORIZ. BRDG AS REQUIRED
3. DESIGN LOADS.
   - LIVE LOAD 20 LBS./SQ FT
   - TOP CHORD DEAD LOAD 7 LBS./SQ FT
   - CEILING LOAD 10 LBS./SQ FT
4. APPROVED SHOP DRAWING SHALL BE REVIEWED AT HUD. PRIOR TO FABRICATION



roof plan SCALE: 1/16" = 1'-0"

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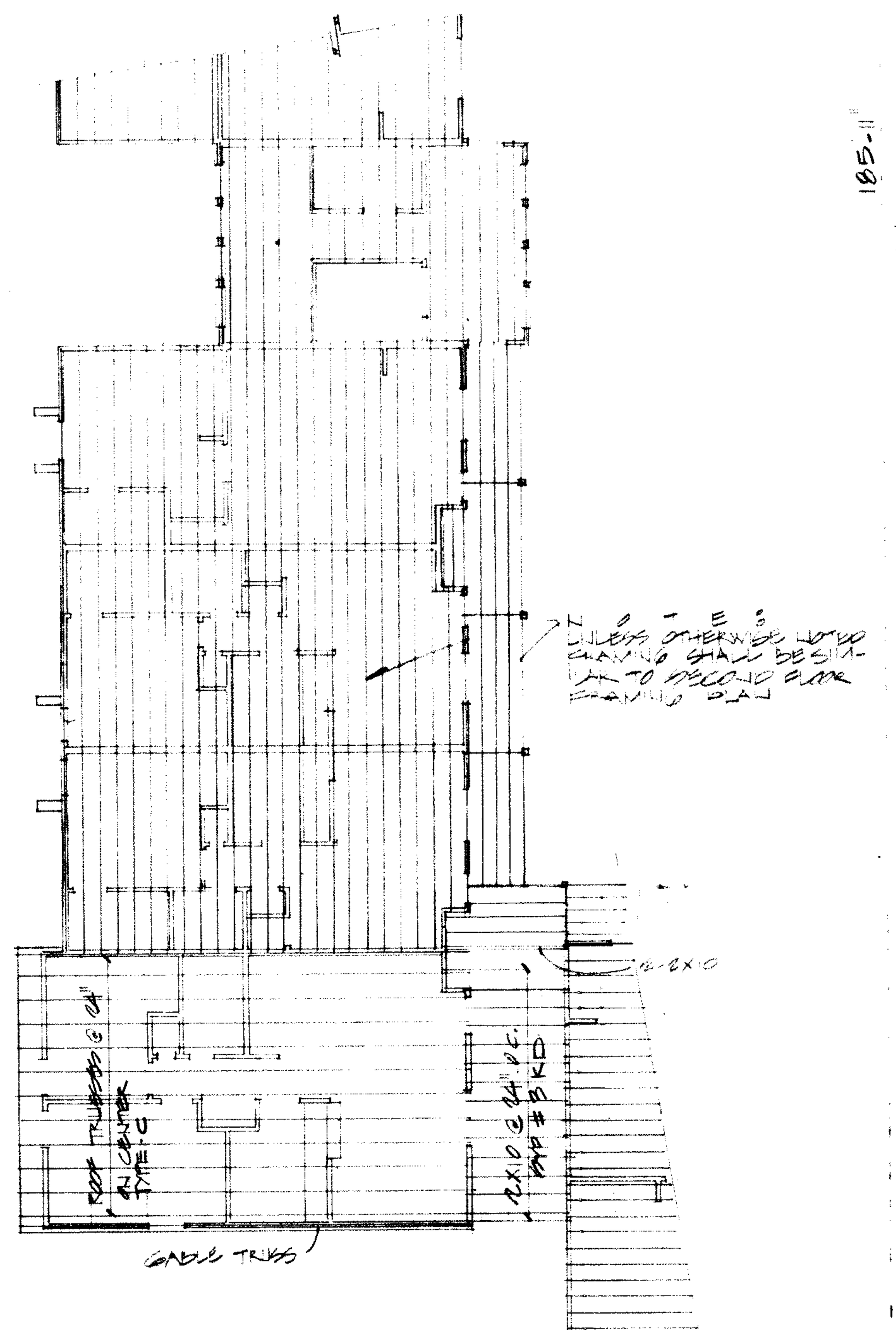
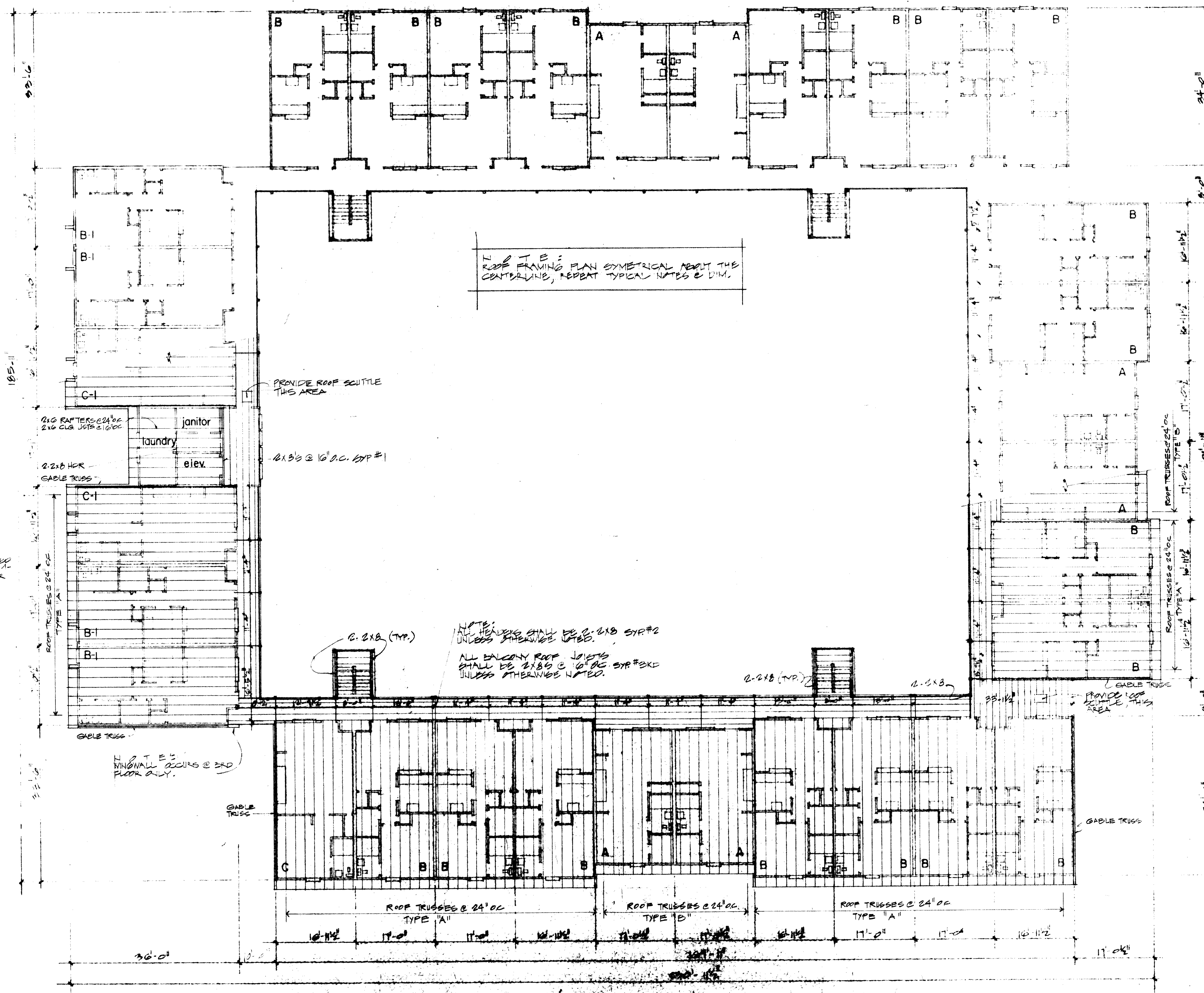


THIRD FLOOR FRAMING PLAN

SCALE: 3/32" = 1'-0"



ROOF FRAMING PLAN

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San Antonio Housing Authority
100 UNIT ELDERLY PROJECT
LAWNDALE DRIVE
HUD PROJECT NO TEX 59-0007-004
OWNER

PROJECT NUMBER	7825
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FRAMING NOTES:

1. INSTALL SOLID BLOCKING AND/OR BRIDGING AT FLOOR JOISTS SPANS EXCEEDING 10'-0".
2. CONNECT ALL FLOOR JOISTS TO FLUSH BEAMS OR HEADERS WITH METAL FRAMING ANCHORS.
3. INSTALL DOUBLE FLOOR JOISTS UNDER ALL PARTITIONS RUNNING PARALLEL WITH JOISTS.
4. INSTALL SOLID BLOCKING AT ALL BEARING POINTS OF FLOOR JOISTS.
5. INSTALL DOUBLE AND/OR TRIPLE STUDS AT ALL BEAM BEARING POINTS.
6. INSTALL 1x4 CORNER BRACING OR 1/2" PLYWOOD SHEATHING AT ALL EXTERNAL CORNERS OF ALL EXTERIOR WALLS.

HEADERS - EXTERIOR WALLS:

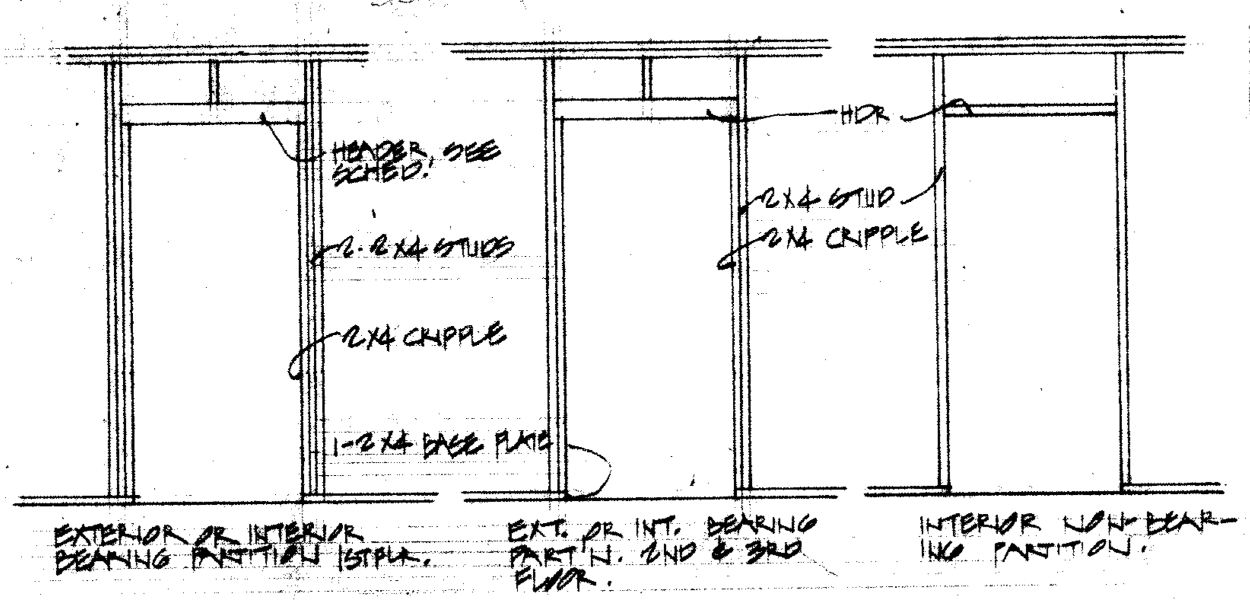
1. ALL WALLS FACING COURTYARD & PASSAGEWAYS: ALL OPENINGS ———— 2-2x12
2. ALL OPENINGS UP TO 3'-8" SCHED. OPNG. WIDTH — 2-2x6
   ALL OPENINGS UP TO 6'-0" SCHED. OPNG. WIDTH — 2-2x10

HDRS. INT. BEARING PARTITIONS:

1. ALL OPENINGS UNLESS OTHERWISE NOTED ON FRAMING PLANS —— 2-2x6

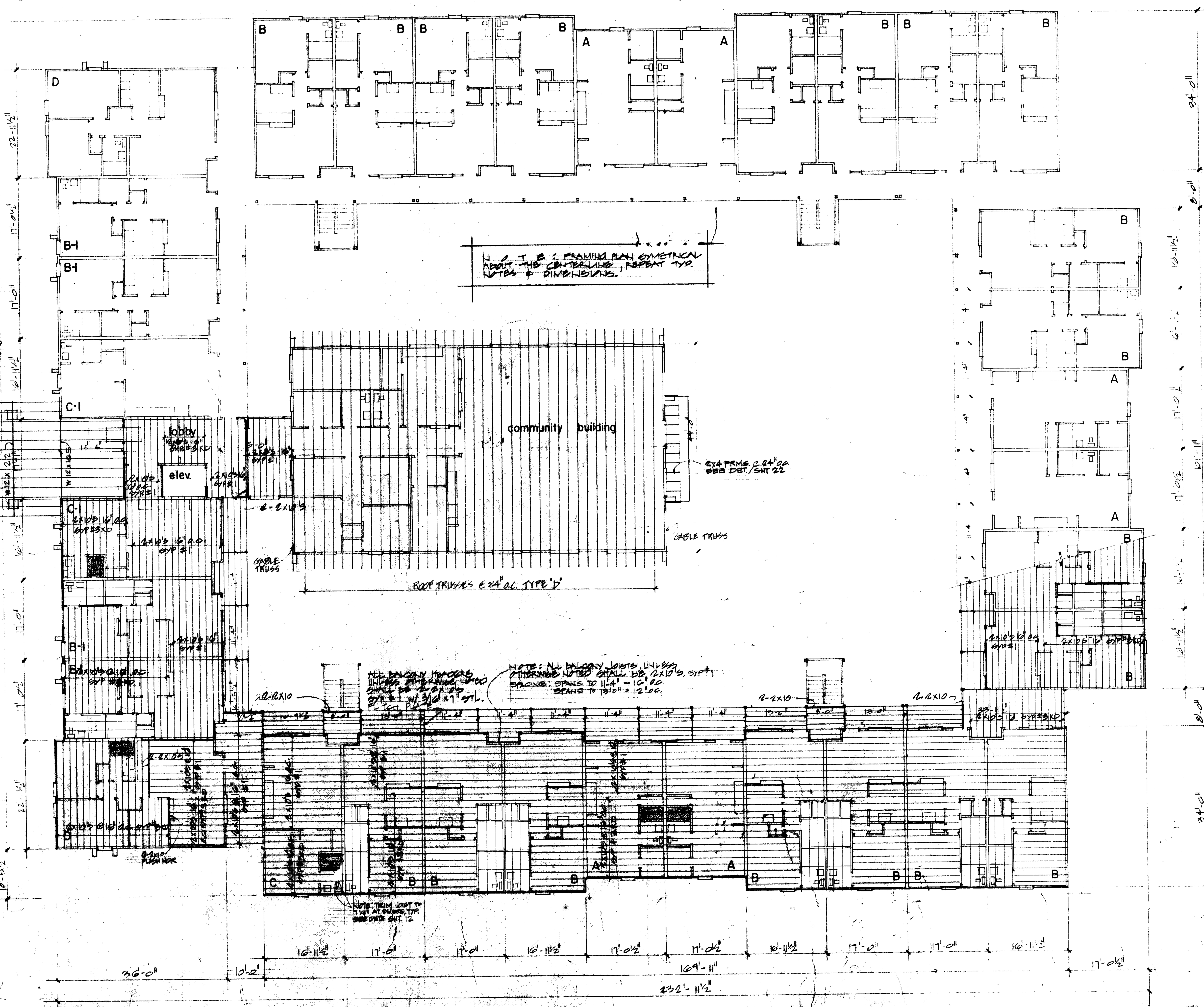
HDRS. INT. NON-BEARING PARTITIONS

1. ALL OPENINGS UNLESS OTHERWISE NOTED ON FRAMING PLANS ———— 1-2x4 FLAT.



TYPICAL FRAMING DETAILS @ OPNGS.

SCALE: 3/8" = 1'-0"



SECOND FLOOR FRAMING PLAN

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LAWNDALE DRIVE
HUD PROJECT NO TEX 59-0007-004
OWNER

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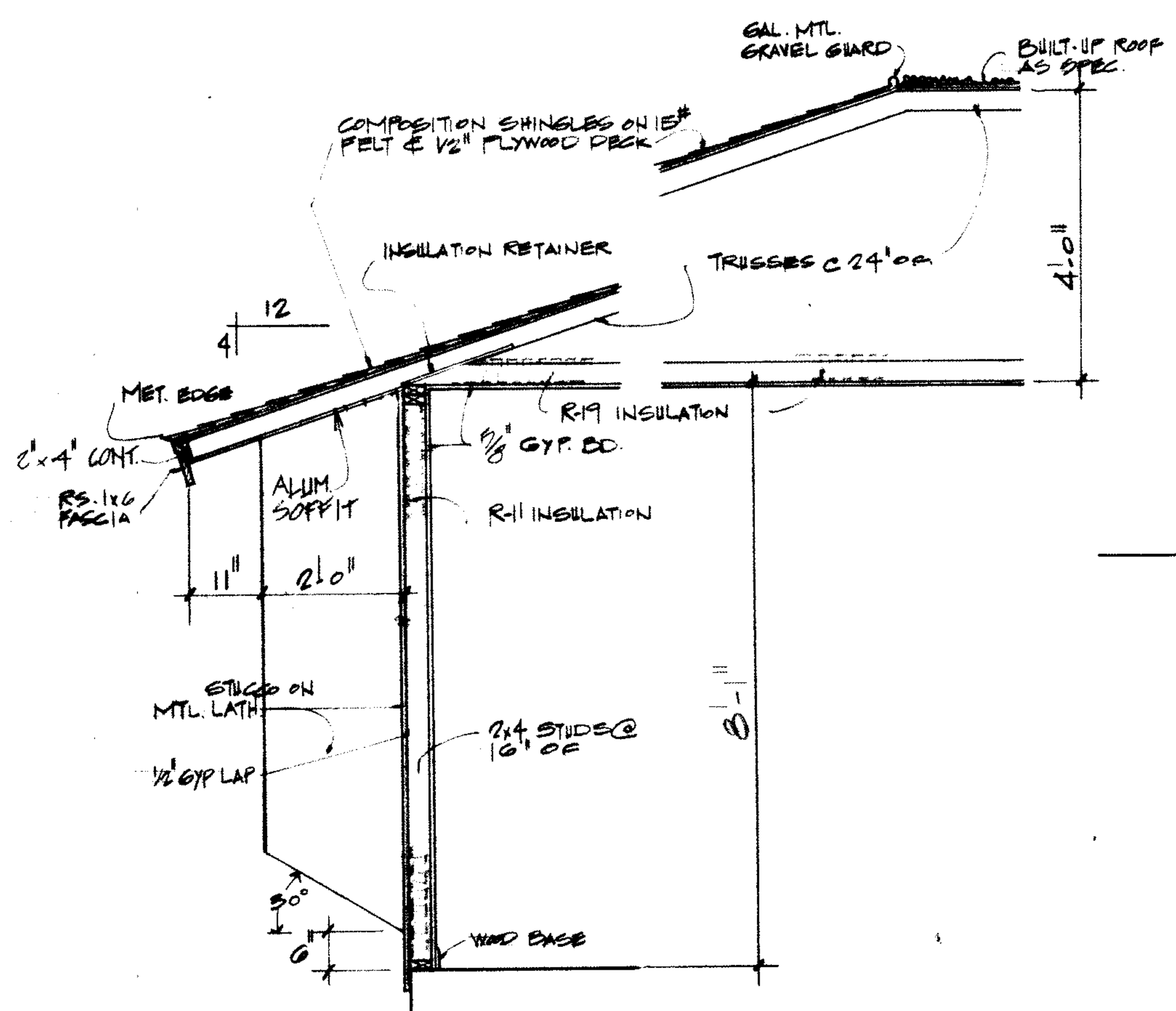
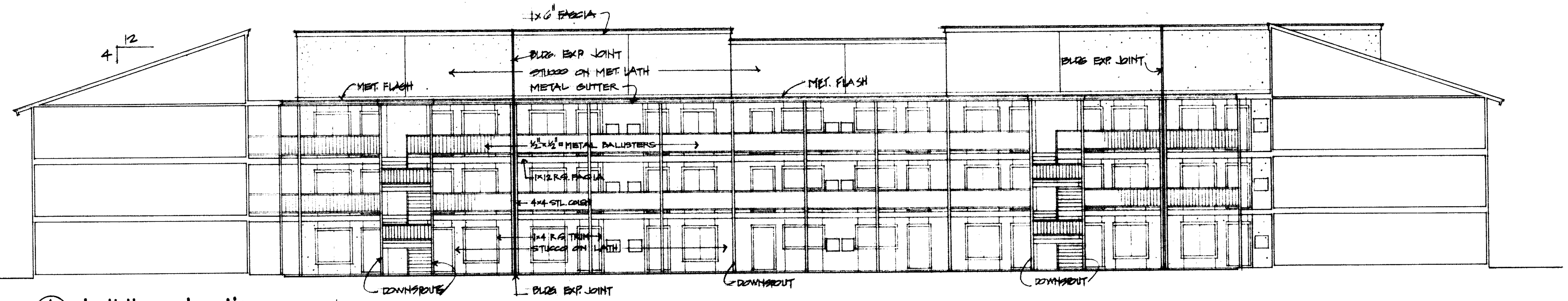
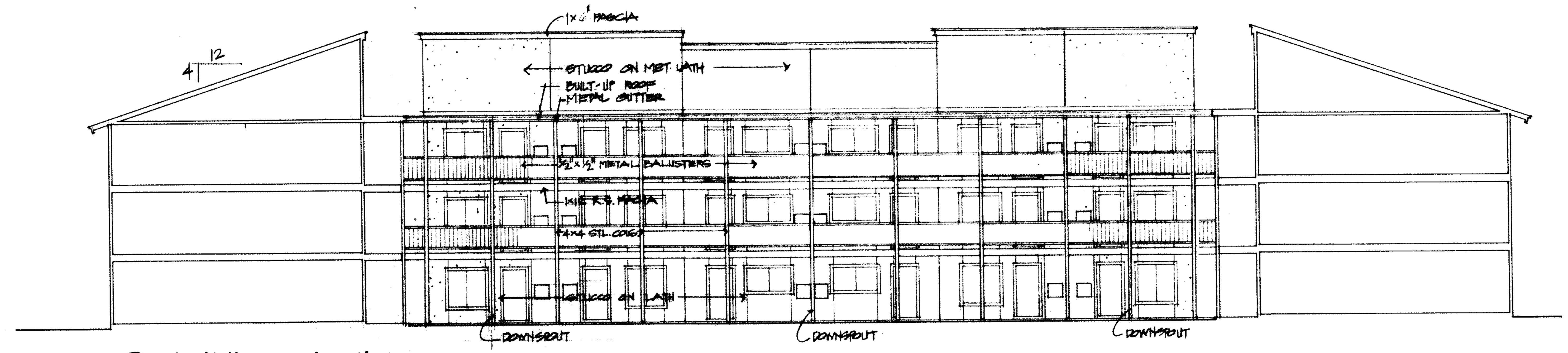


comm. bldg. wall section

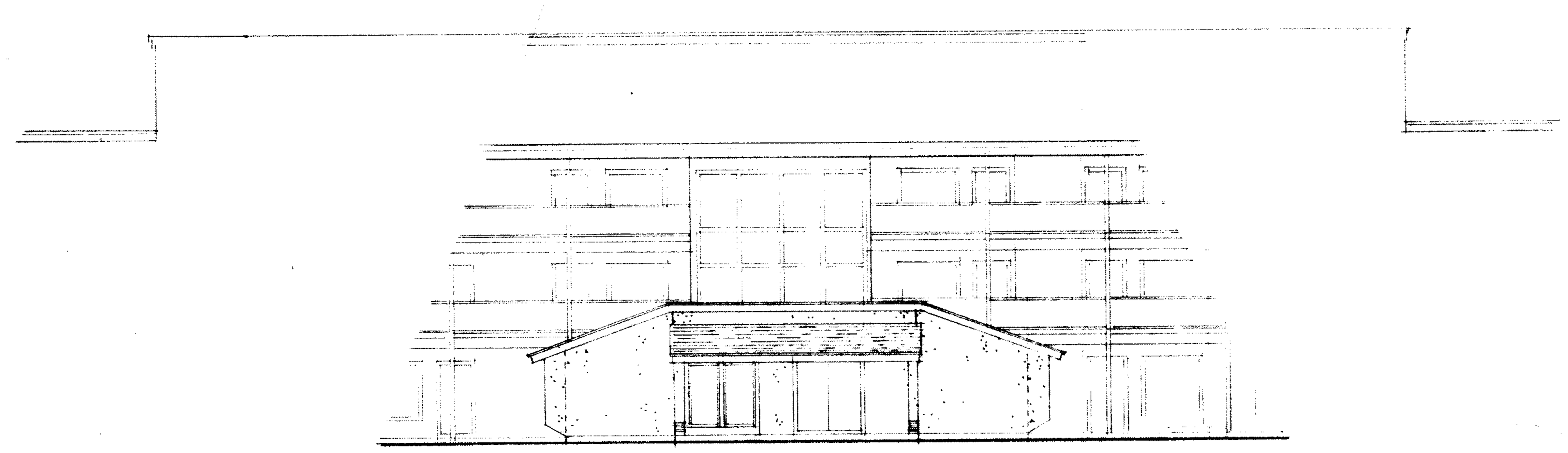
SCALE: 1/2" = 1'-0"



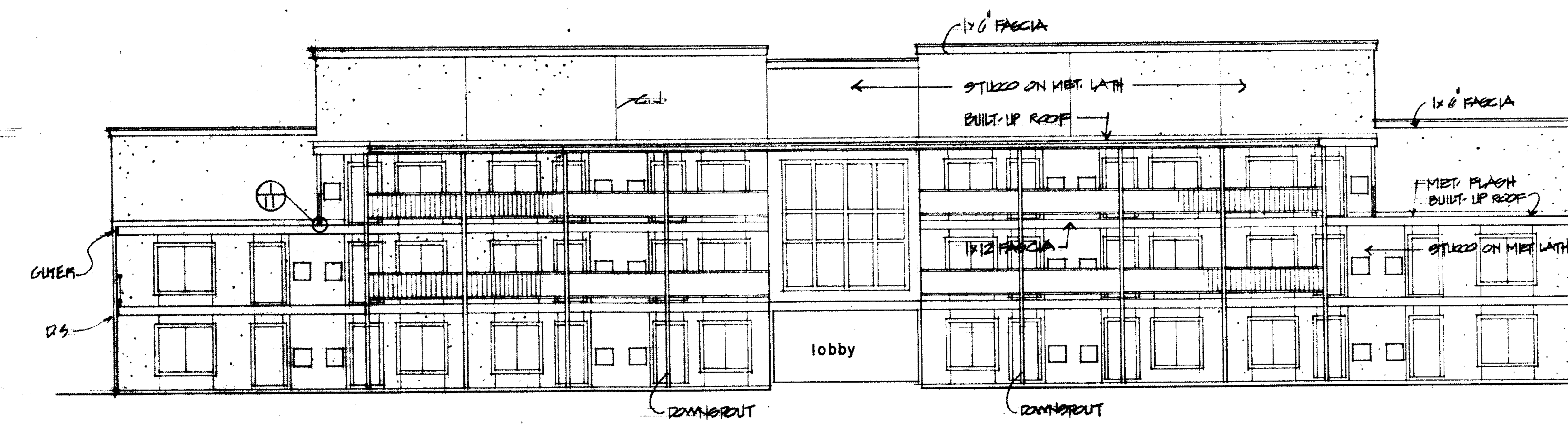
building elevation SCALE: 3/32" = 1'-0"



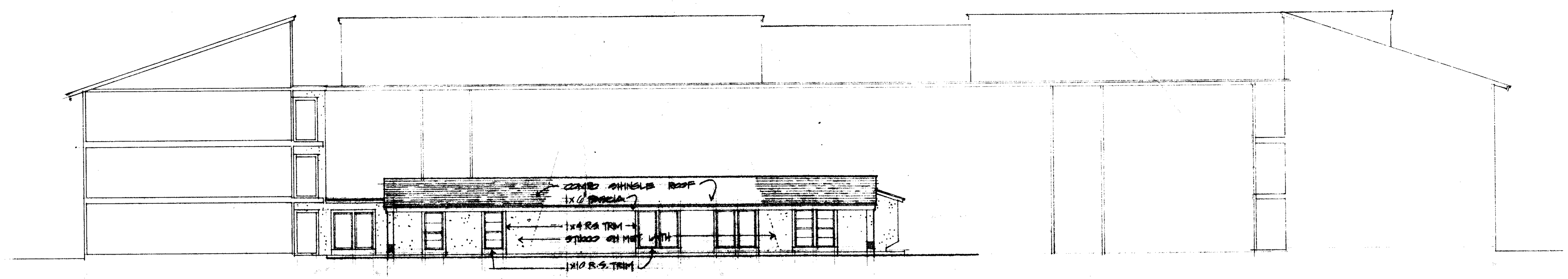
building elevation SC: 3/32" = 1'-0"



community bldg. elevation 3/32" = 1'-0"



building elevtion SC: 3/32" = 1'-0"



community bldg. elevation SC: 3/32" = 1'-0"

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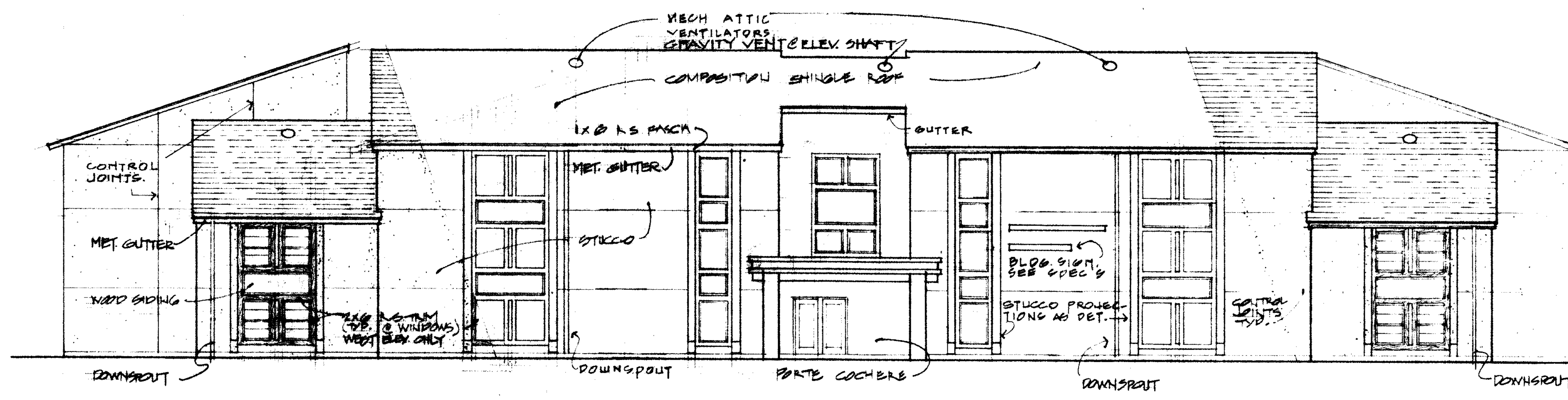
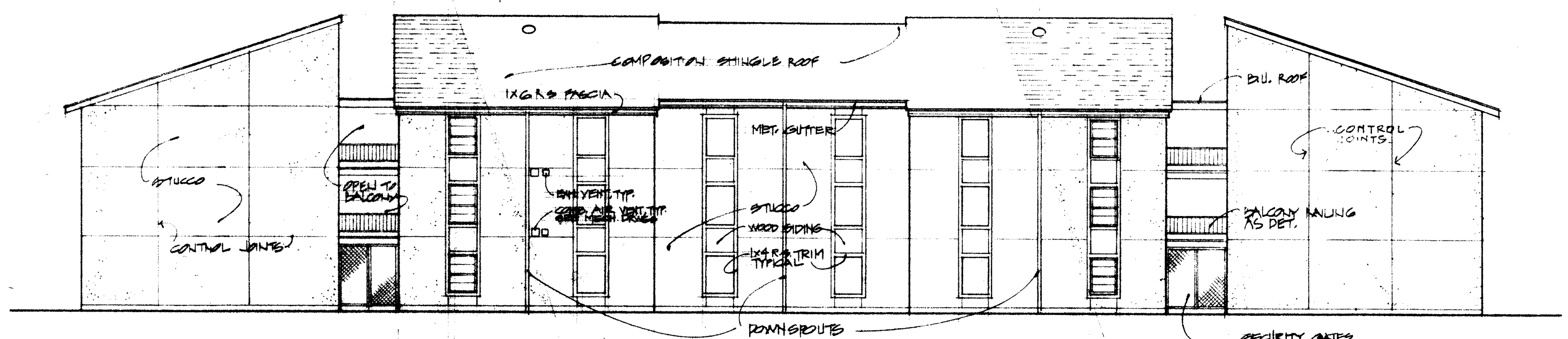
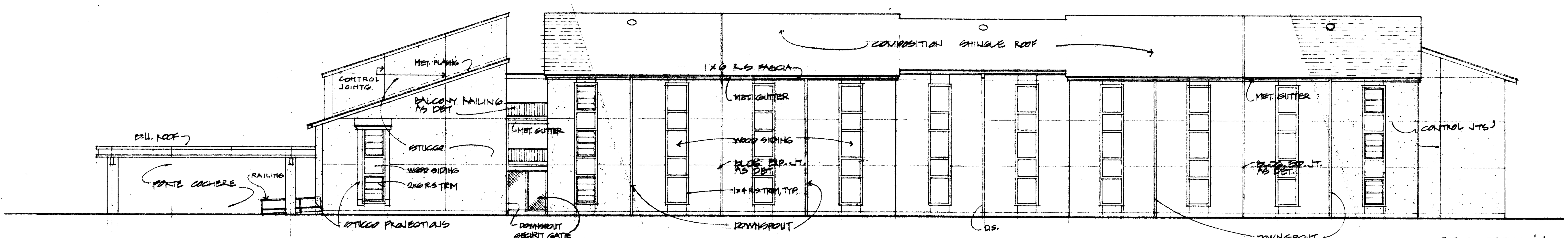


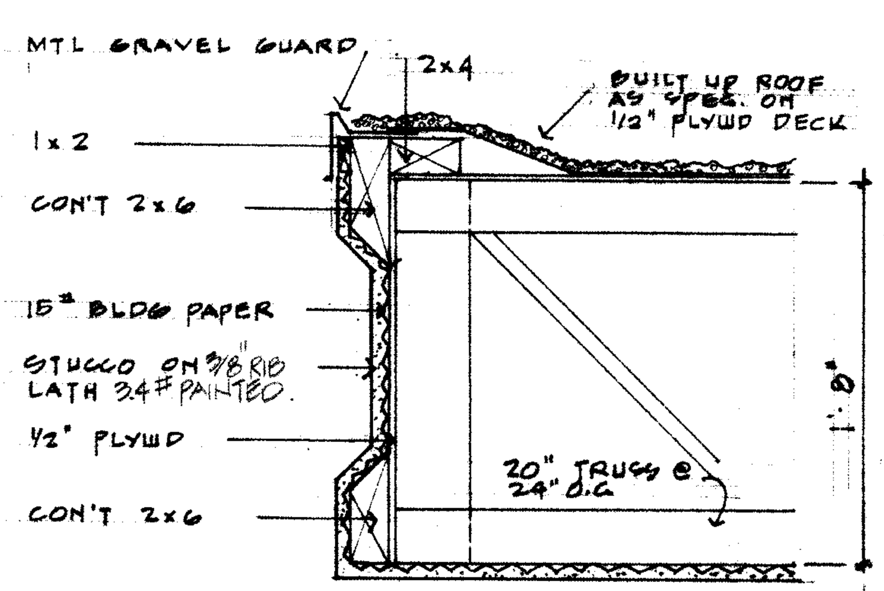
west elevation SCALE: 3/32" = 1'-0"



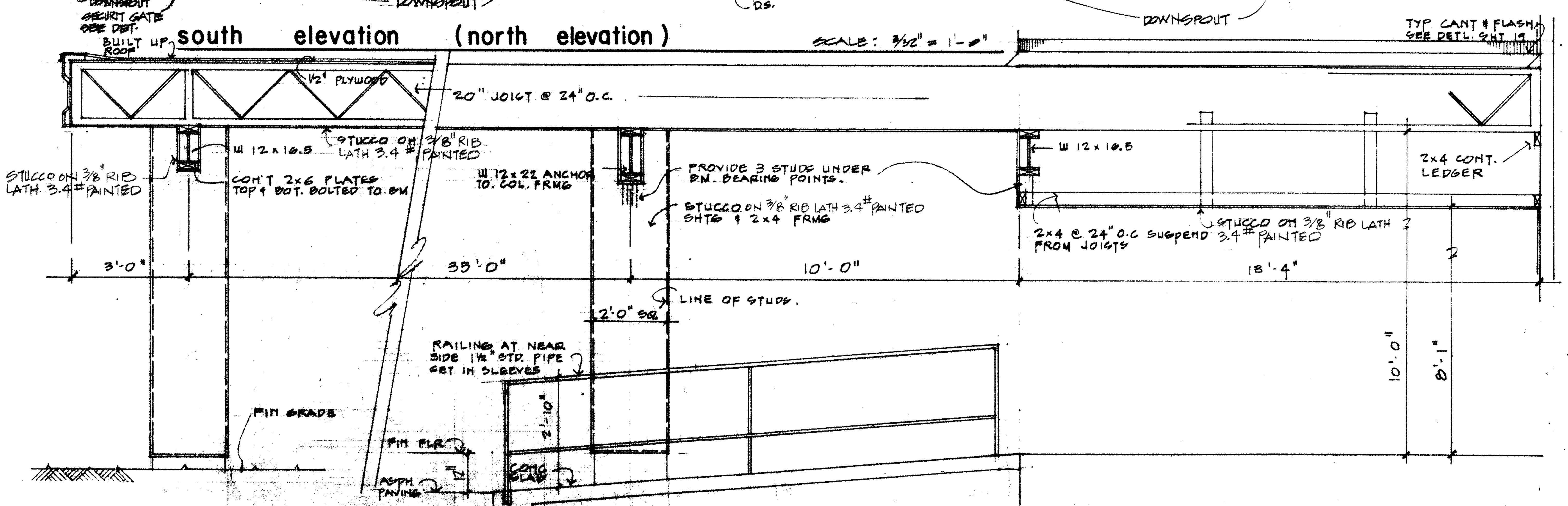
east elevation SCALE: 3/32" = 1'-0"



south elevation (north elevation) SCALE: 3/32" = 1'-0"



detail
SC: 1 1/2" = 1'-0"



sect. thru porte cochere
SC: 1/2" = 1'-0"

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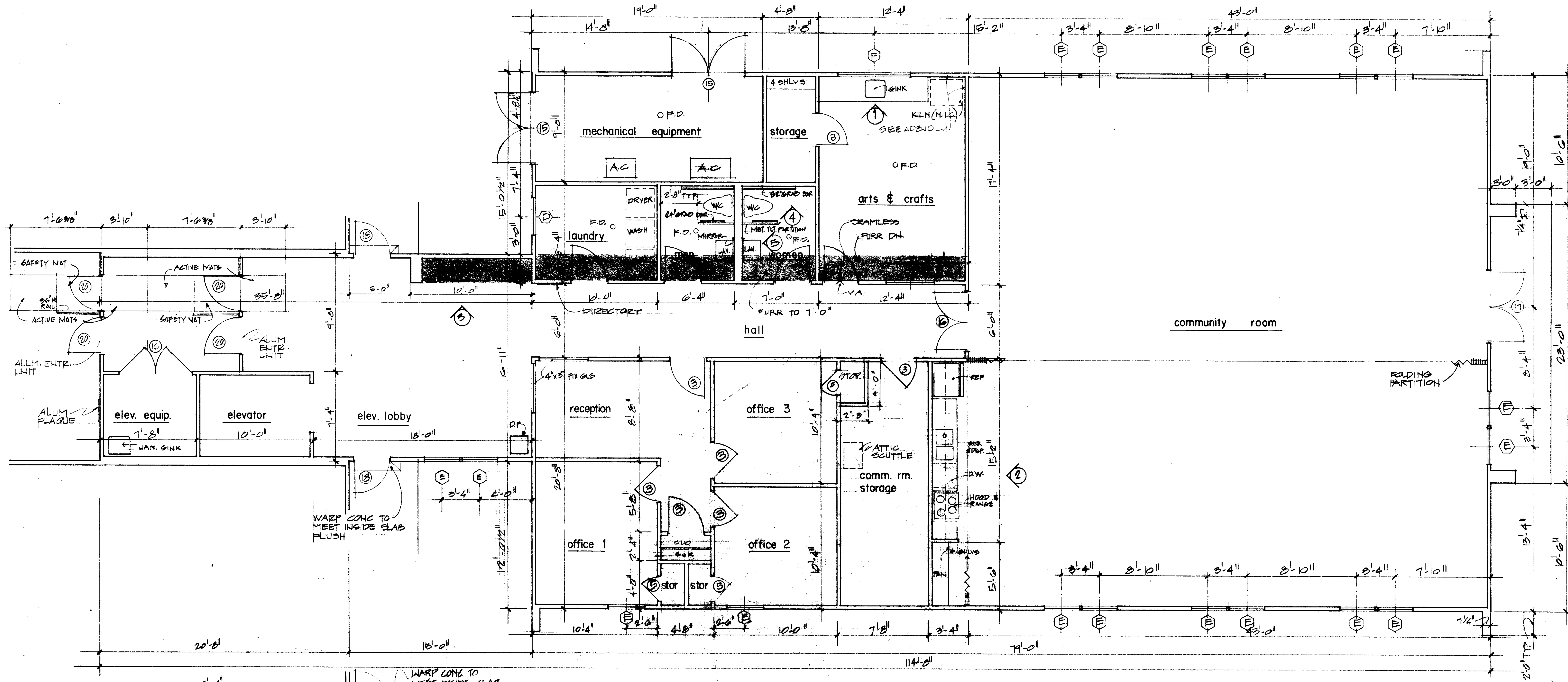
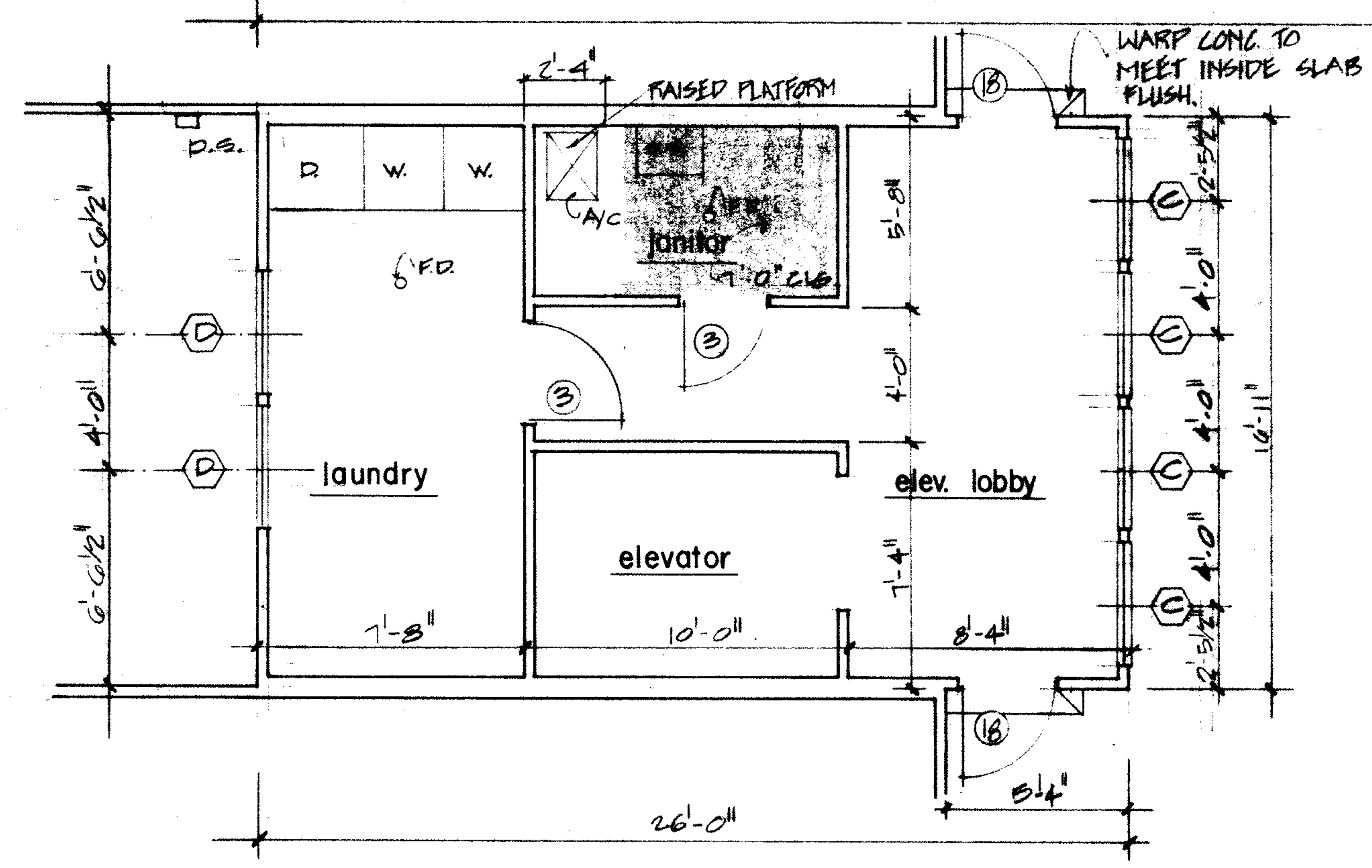


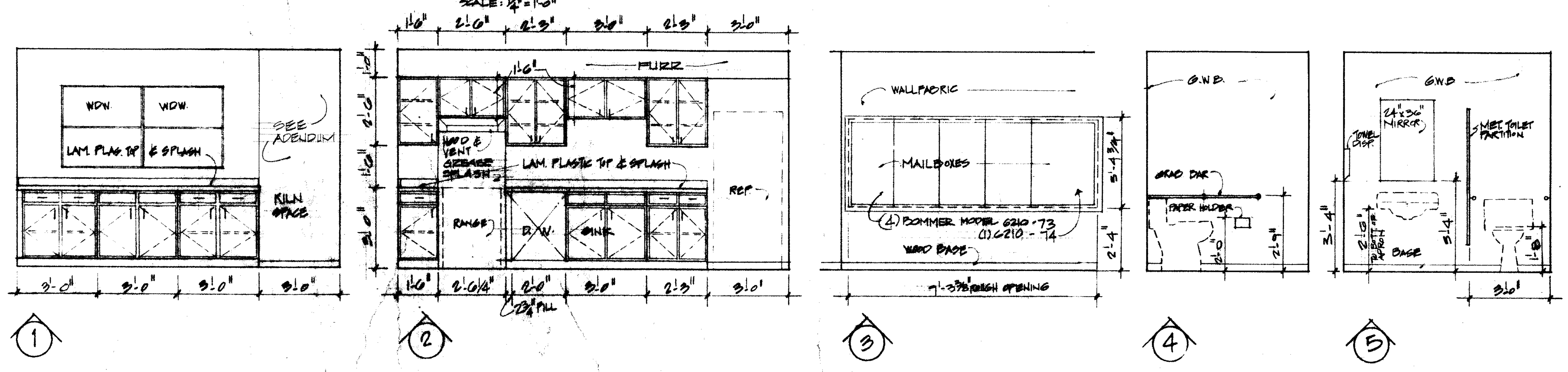
LOBBY & COMMUNITY BUILDING FLOOR PLAN

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



SECOND & THIRD FLOOR ELEVATOR LOBBY PLAN

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



LOBBY & COMMUNITY BLDG. INTERIOR ELEVATIONS

SCALE: 3/8" = 1'-0"

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100 UNIT ELDERLY PROJECT
LAWNDALE DRIVE
HUD PROJECT NO TEX 59-0007-004
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PROJECT NUMBER:	7323
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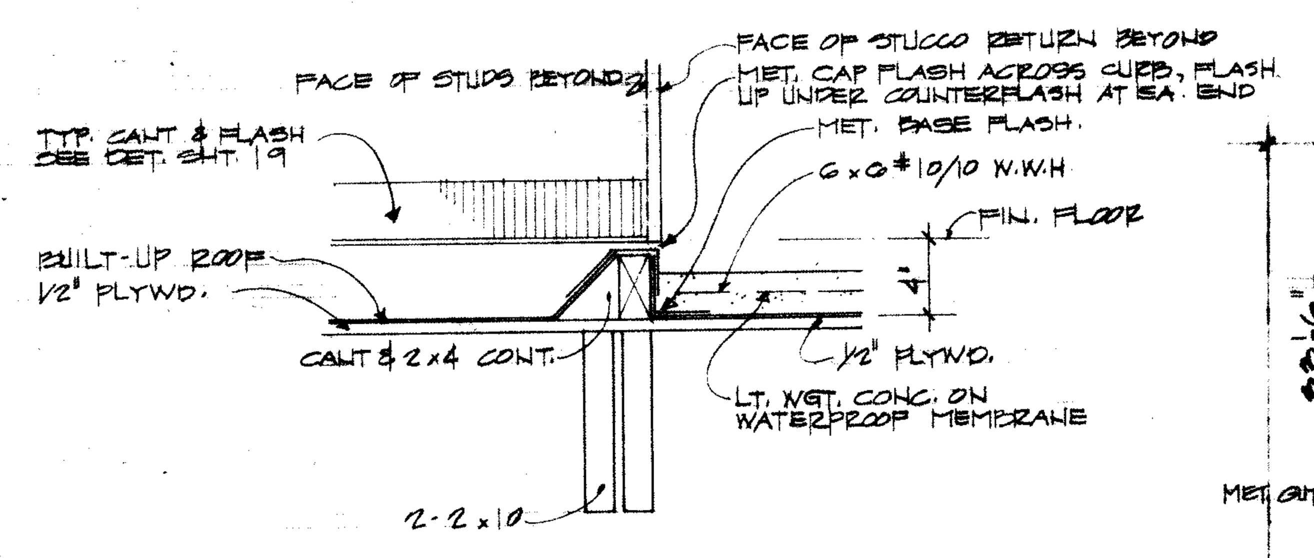
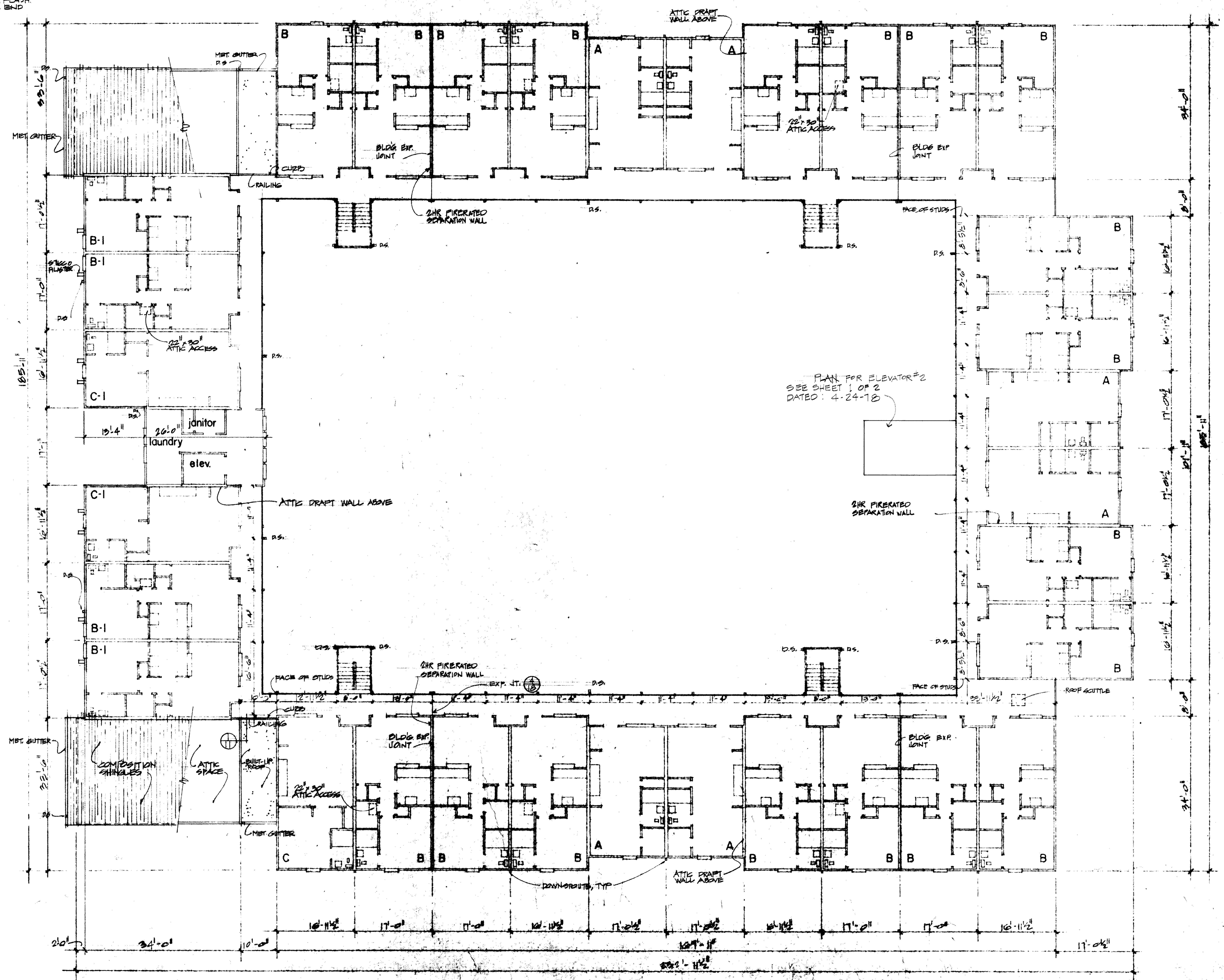


ROOF CURB
SC: 1 1/2" = 1'-0"



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PROJECT
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LAWNDALE DRIVE
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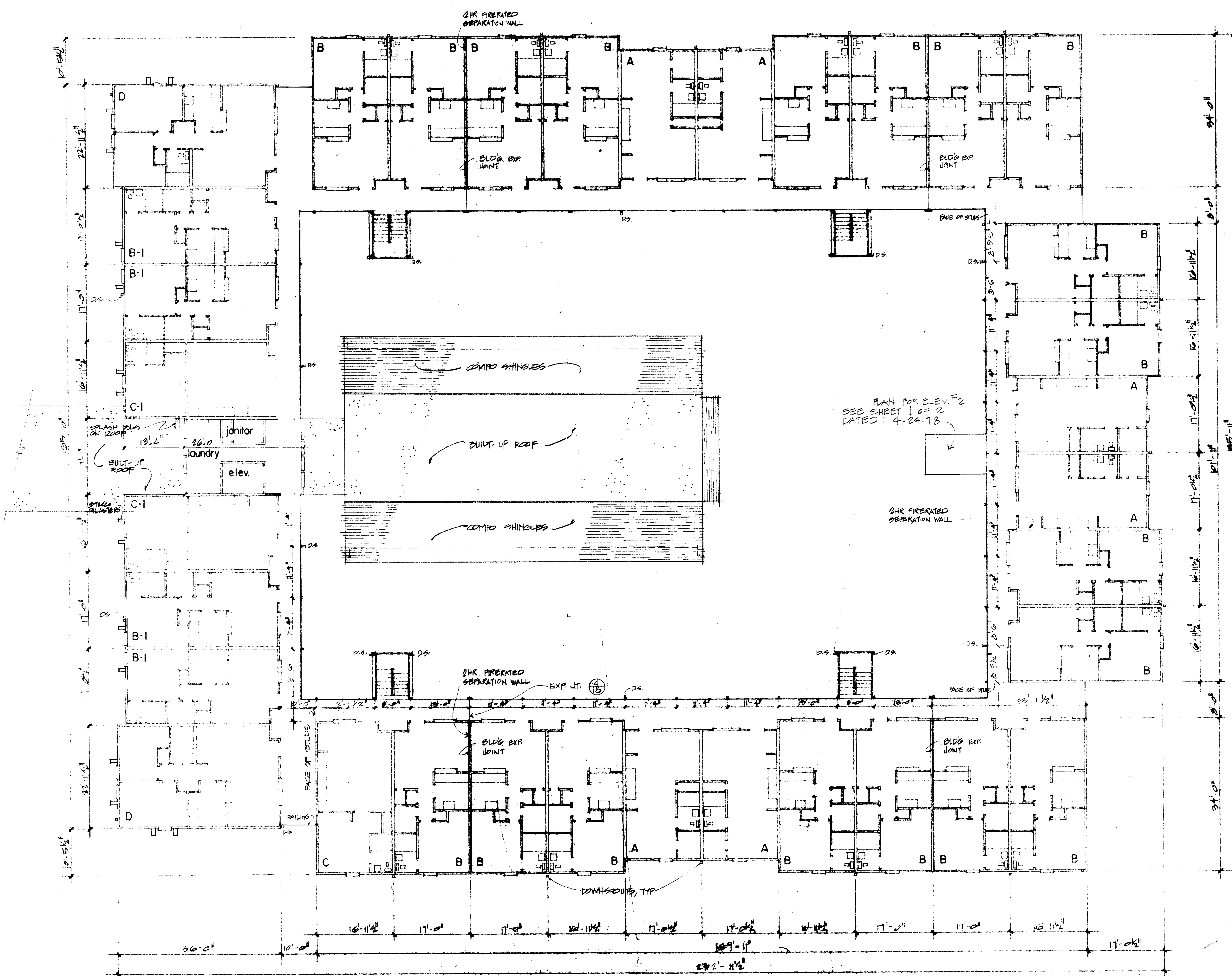
BUILDING PLAN - THIRD FLOOR



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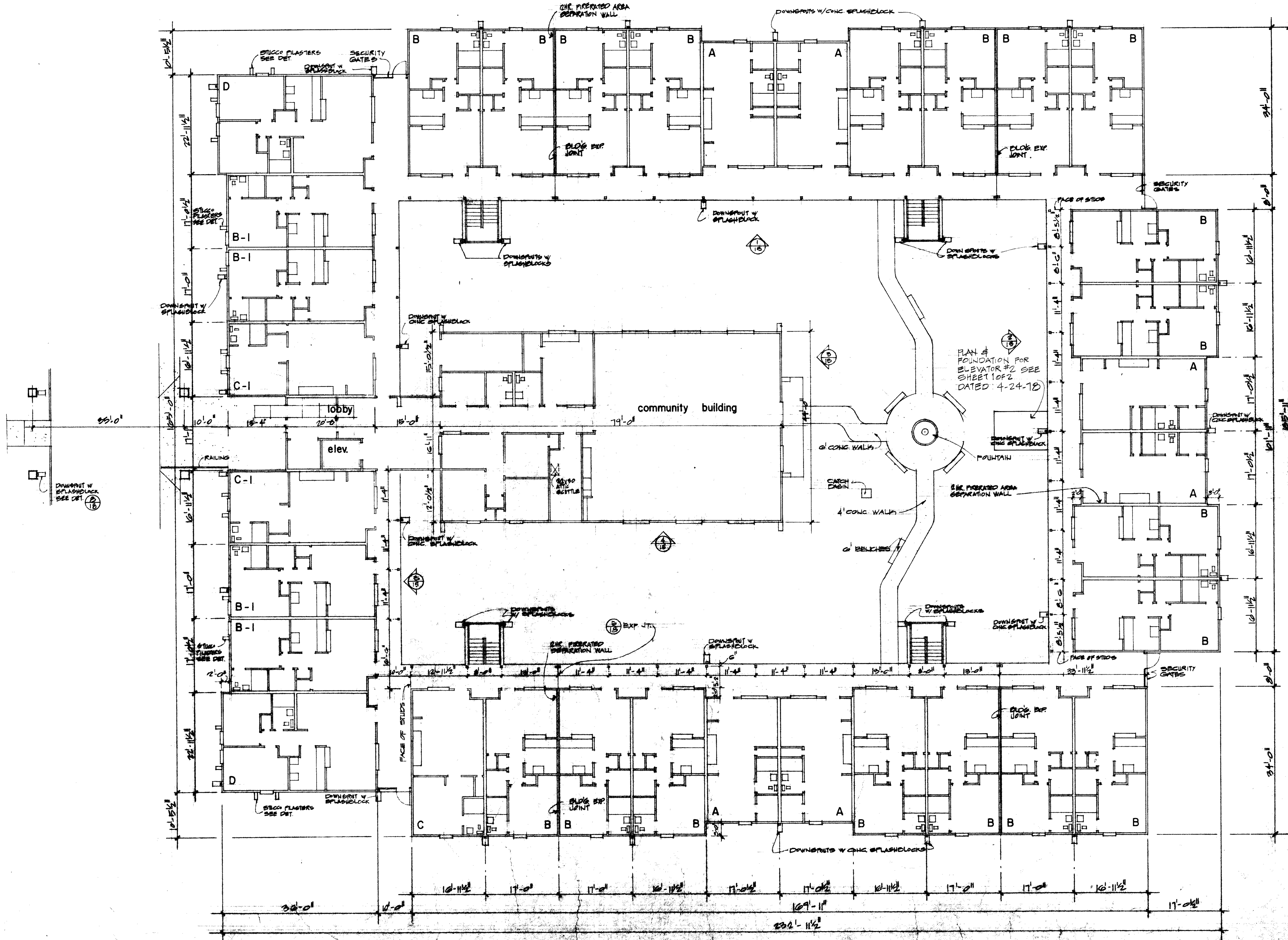
BUILDING PLAN - SECOND FLOOR



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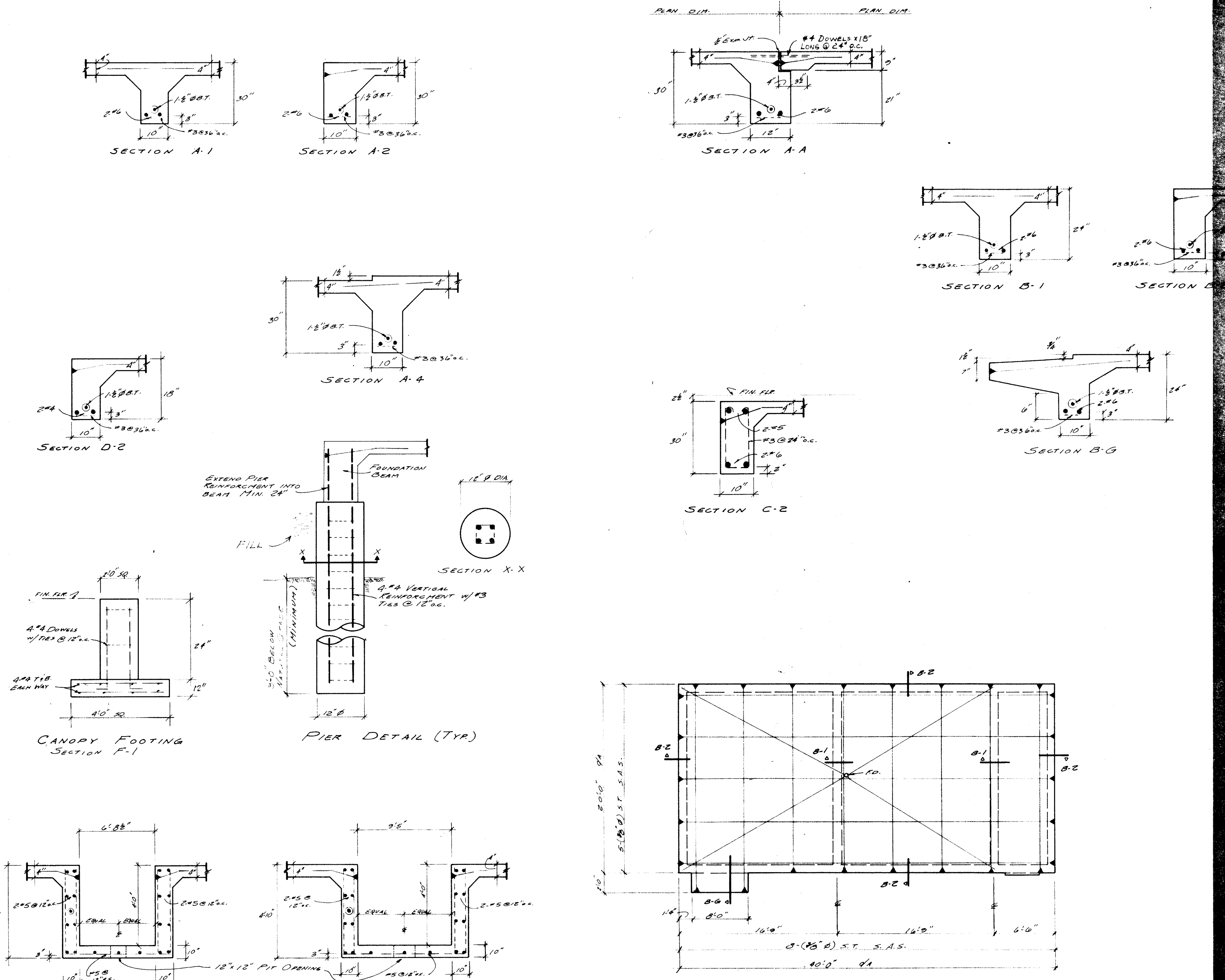
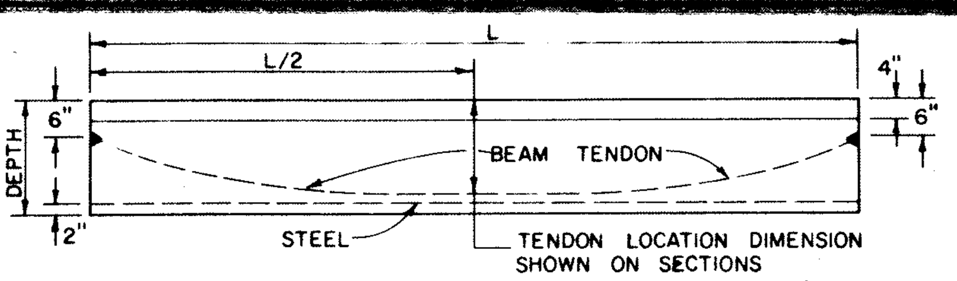
BUILDING PLAN - FIRST FLOOR

3/32" = 1'-0"



MAINTENANCE BUILDING

SCALE; 3/16" = 1'-0"



GENERAL NOTES:

1. CONCRETE: MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.
2. STEEL: ALL REINFORCING BARS SHALL BE ASTM-615 GRADE 60.
3. OPENINGS THROUGH SLAB: NONE LARGER THAN 8" WITH THE EXCEPTION OF TUB TRAP OPENINGS 12" X 14" FILLED WITH HOT TAR.
4. WATERPROOFING MEMBRANE: 6 MIL. POLYETHYLENE.
5. 6" SELECT MATERIAL CUSHION UNDER SLAB WITH P.I. LESS THAN 12.
6. ALL EXTERIOR BEAMS SHALL BE MINIMUM 6" INTO UNDISTURBED SOIL.
7. ALL OTHER BEAMS 6" INTO UNDISTURBED SOIL UNLESS FILL UNDER SLAB HAS BEEN COMPACTED TO NOT LESS THAN 90% OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM DENSITY TEST NO. D 1557-58T OR 95% OF THE MAXIMUM DENSITY IN ACCORDANCE WITH MODIFIED PROCTOR COMPACTION TEST (ASTM D 1557-70). THE FILL MATERIAL SHOULD BE PLACED IN LOOSE LIFTS NOT EXCEEDING 8" IN THICKNESS.
8. WHERE CALLED FOR, ALL TENDONS SHALL BE 270 K GRADE 7 WIRE STEEL STRAND 3/8" IN DIAMETER OR 1/2" IN DIAMETER, GREASED AND SHEATHED WITH A PLASTIC SLEEVE.
9. ANCHORS FOR THE TENDONS SHALL BE MANUFACTURED BY RELIABLE ELECTRIC AND SHALL CONFORM TO ACI REQUIREMENTS.
10. ALL 3/8" TENDONS SHALL BE POST-TENSIONED TO AN INITIAL STRESS OF 18,500 POUNDS EACH AND ALL 1/2" TENDONS TO AN INITIAL STRESS OF 33,000 POUNDS EACH. THE POST-TENSIONING SHALL BE APPLIED AS DIRECTED BY THE ENGINEER AND SHALL NOT BE APPLIED UNTIL THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI, UNLESS APPROVED OTHERWISE.
11. ALL BARS AND/OR TENDONS ARE TO BE SUPPORTED IN THE FORMS AND SLAB WITH CHAIRS OR SLAB BOLSTERS, AND SHALL BE TIED AT EVERY OTHER INTERSECTION IN CASE OF BARS AND EVERY INTERSECTION IN CASE OF TENDONS.
12. CABLES OVER 75' IN LENGTH SHALL HAVE "LIVE" ENDS AT BOTH ENDS.
13. CONTRACTOR TO VERIFY ALL DIMENSIONS, DROP AREAS AND BLOCK OUT LOCATIONS WITH ARCHITECT'S FLOOR PLAN.
14. UNLESS APPROVED OTHERWISE NO GROWING TREES SHALL BE ALLOWED WITHIN 15 FEET OF SLAB PERIMETER.
15. PROVIDE POSITIVE DRAINAGE AWAY FROM THE SLAB PERIMETER. THE BOTTOM OF THE SURFACE SLAB SHOULD BE A MINIMUM OF 6 INCHES ABOVE THE SURROUNDING OUTSIDE FINISHED GRADE. THE GROUND SHOULD BE SLOPED DOWN AND AWAY FROM THE EDGE OF THE SLAB FOR 25 FEET AT A 2% SLOPE.

WE, MAVERICK ENGINEERING COMPANY, CERTIFY THAT THIS FOUNDATION--SLAB AND ITS ELEMENTS--HAS BEEN DESIGNED IN ACCORDANCE WITH RECOGNIZED ENGINEERING PRACTICES* FOR THE SOIL CONDITIONS AS DETERMINED BY SOIL ANALYSIS PREPARED BY TRINITY TESTING LAB DATED JUNE 15, 1973

*THE LATEST BRAB REPORT CRITERIA ALONG WITH THE LATEST ACI CODE HAVE BEEN USED IN ESTABLISHING THE DESIGN REQUIREMENTS FOR THIS FOUNDATION.

PLASTICITY INDEX 32 | CLIMATIC RATING 15
SOIL CLASSIFICATION CH-CL | BUILDER —

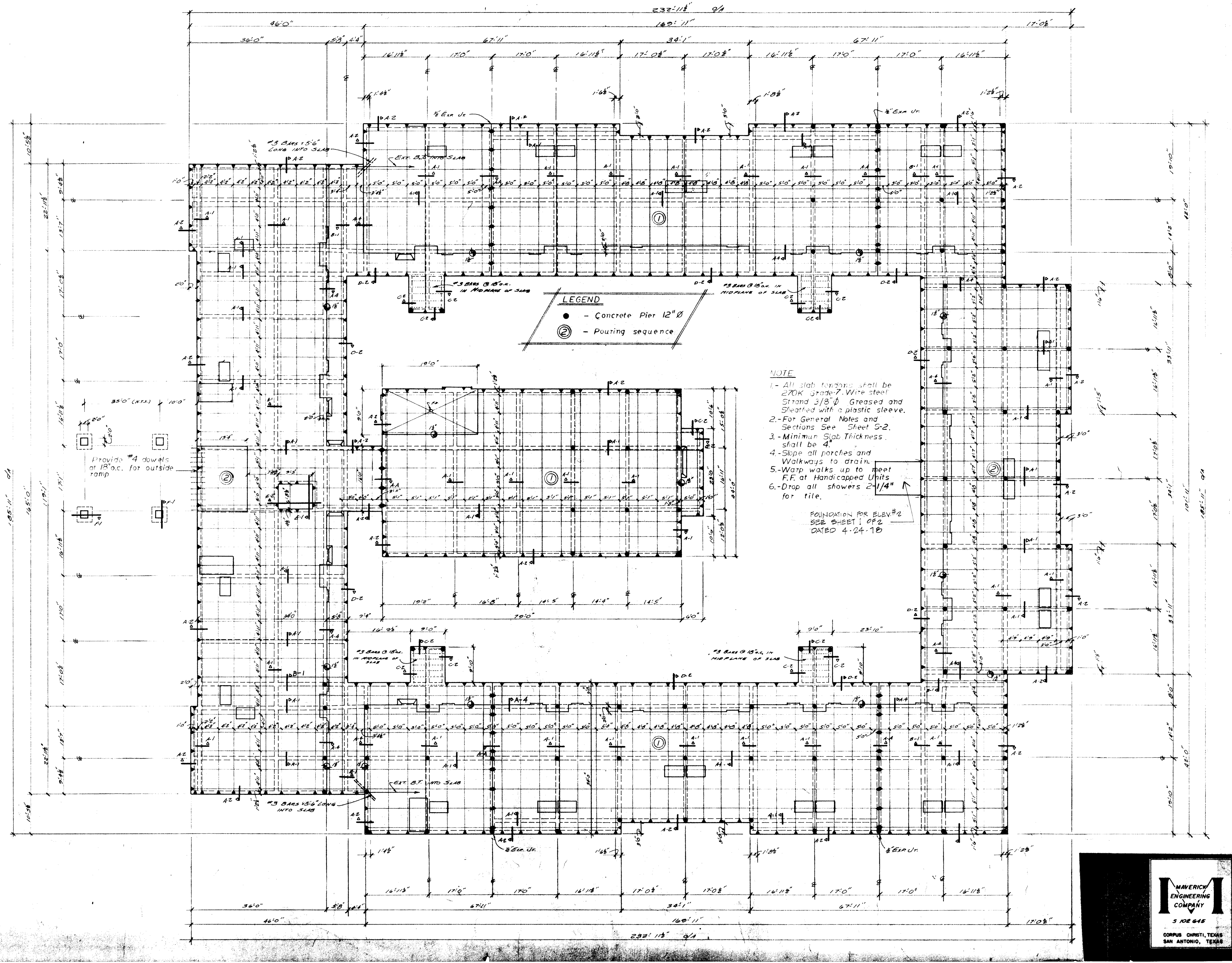
MAVERICK ENGINEERING COMPANY

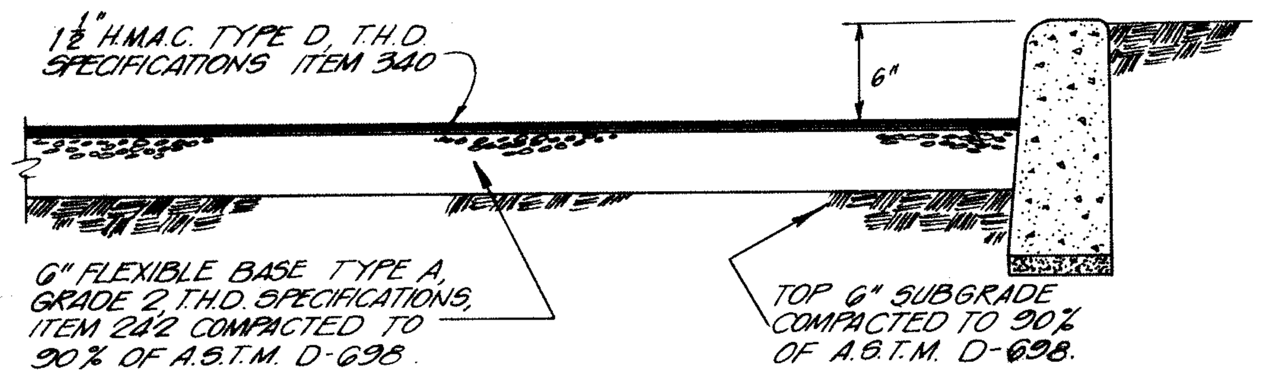
BY: Jatin A. Desai

DATE 1-28-73 JOB NO. S-102 645

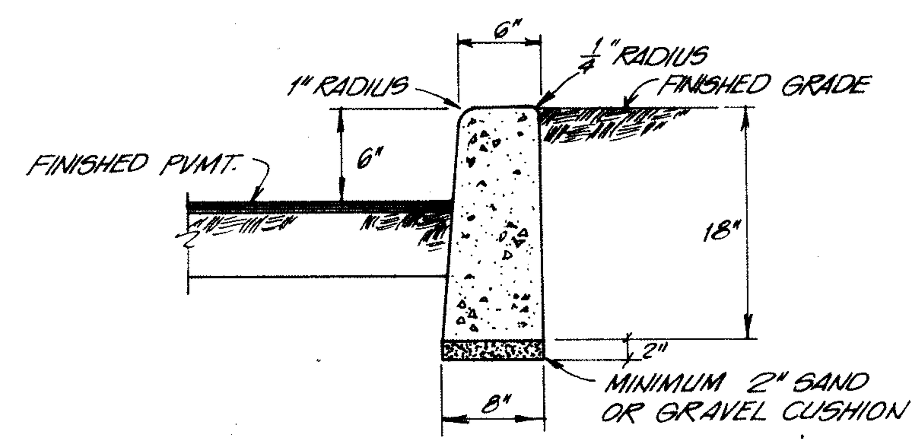
MAVERICK ENGINEERING COMPANY
S 102 645
CORPUS CHRISTI, TEXAS
SAN ANTONIO, TEXAS

ralph c. bender & assoc. inc.

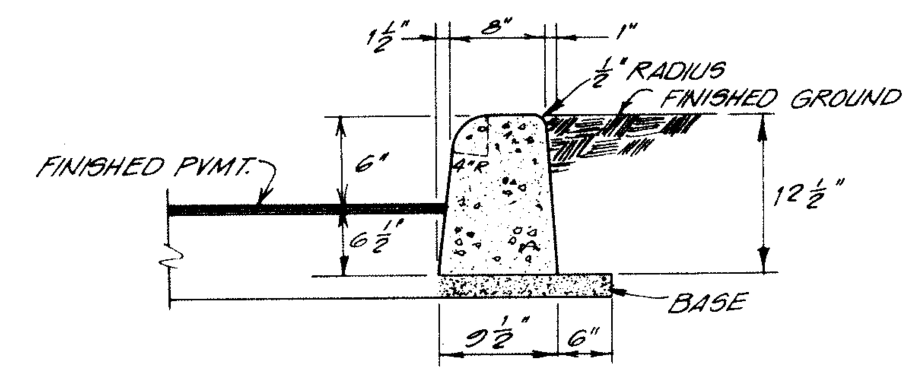

232'-11 1/2"
46'-0"
169'-11"
17'-0 1/2"
36'-0"
67'-11"
34'-1"
67'-11"
LEGEND
● - Concrete Pier 12" Ø
② - Pouring sequence
NOTE
1.- All slab tendons shall be 270K Grade-7. Wire steel Strand 3/8" Ø Greased and Sheathed with a plastic sleeve.
2.-For General Notes and Sections See Sheet S-2.
3.-Minimun Slab Thickness shall be 4"
4.-Slope all porches and Walkways to drain.
5.-Warp walks up to meet F.F. at Handicapped Units
6.-Drop all showers 2-1/4" for tile.
FOUNDATION FOR ELEV. #2
SEE SHEET 1 OF 2
DATED 4-24-18
Provide #4 dowels at 18" o.c. for outside ramp
#3 BARS x 5'-6" LONG INTO SLAB
EXT. B.T. INTO SLAB
#3 BARS @ 18" o.c. IN MIDPLANE OF SLAB
1/2" Exp. Jt.
MAVERICK ENGINEERING COMPANY
S 102 645
CORPUS CHRISTI, TEXAS
SAN ANTONIO, TEXAS



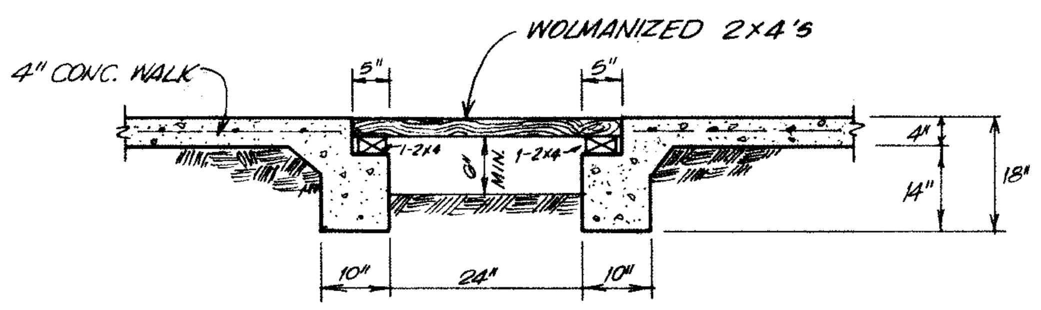
TYPICAL PARKING LOT SECTION



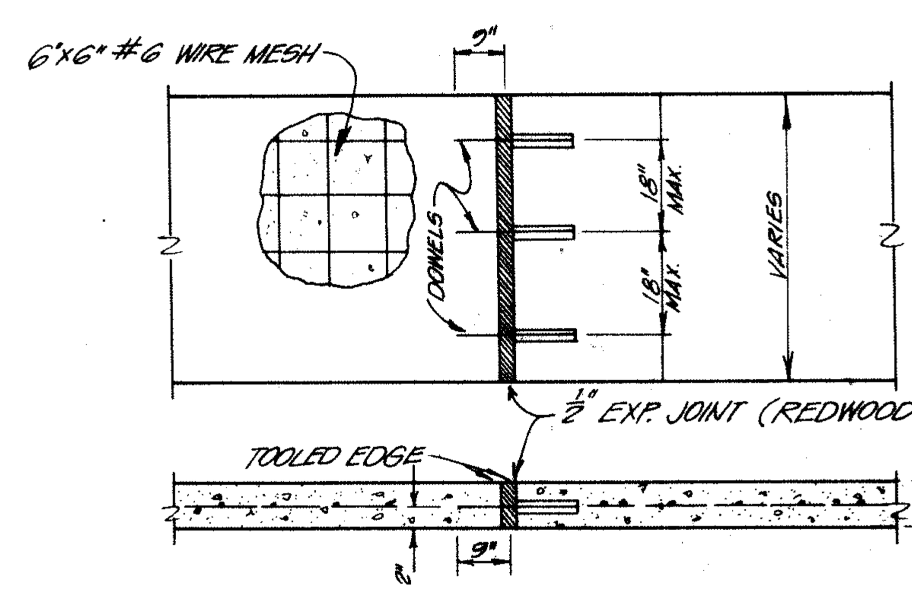
CONCRETE CURB



ALTERNATE MACHINE LAID CONCRETE CURB

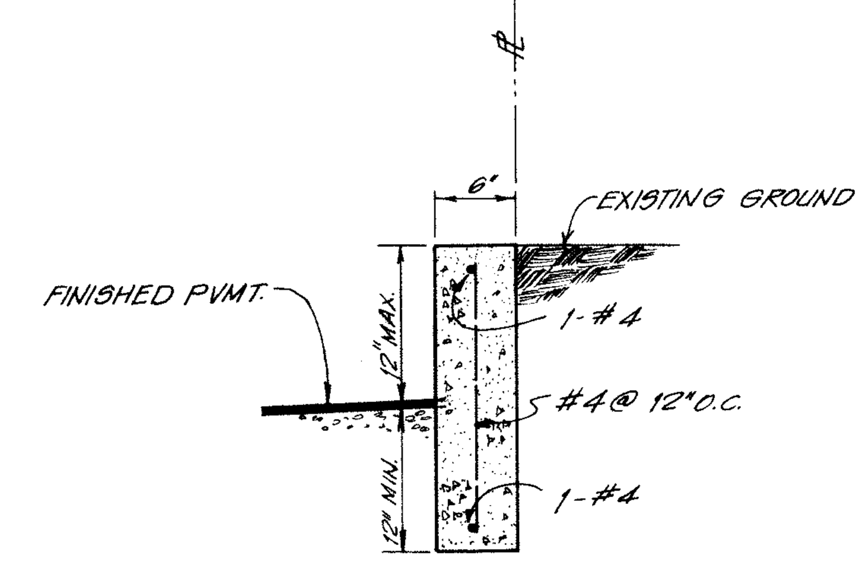


SIDEWALK DRAIN

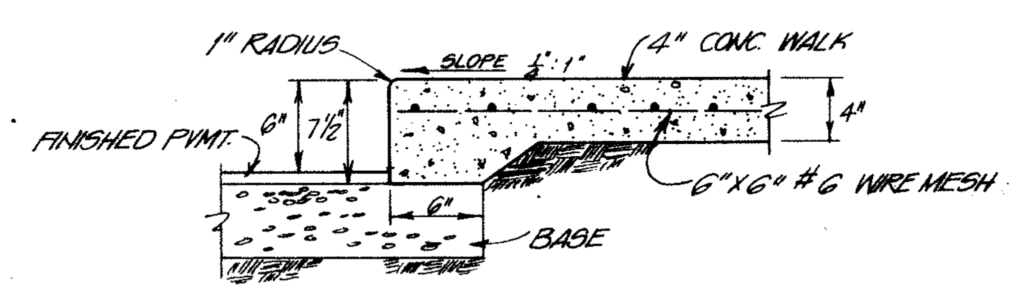


NOTE : PLANES OF WEAKNESS, (DUMMY JOINTS) ½" DEEP SHOULD BE TOOLED INTO WALK AT SPACING EQUAL TO WIDTH OF WALK.

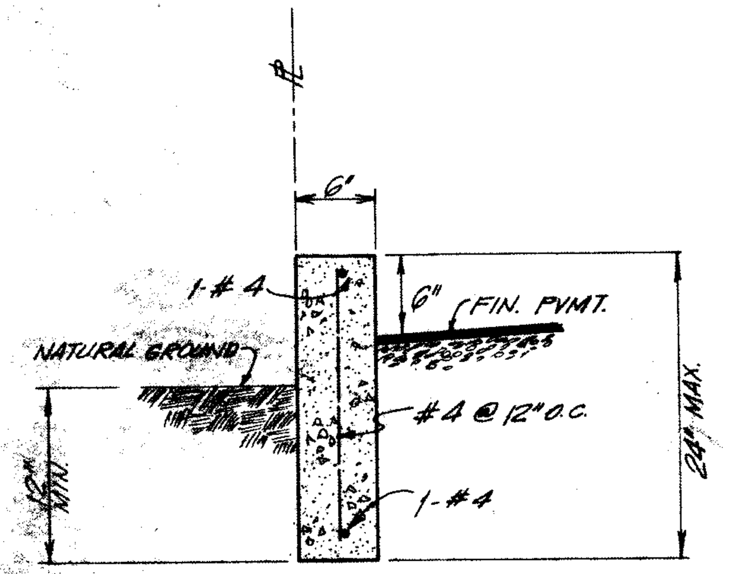
SIDEWALK DETAIL



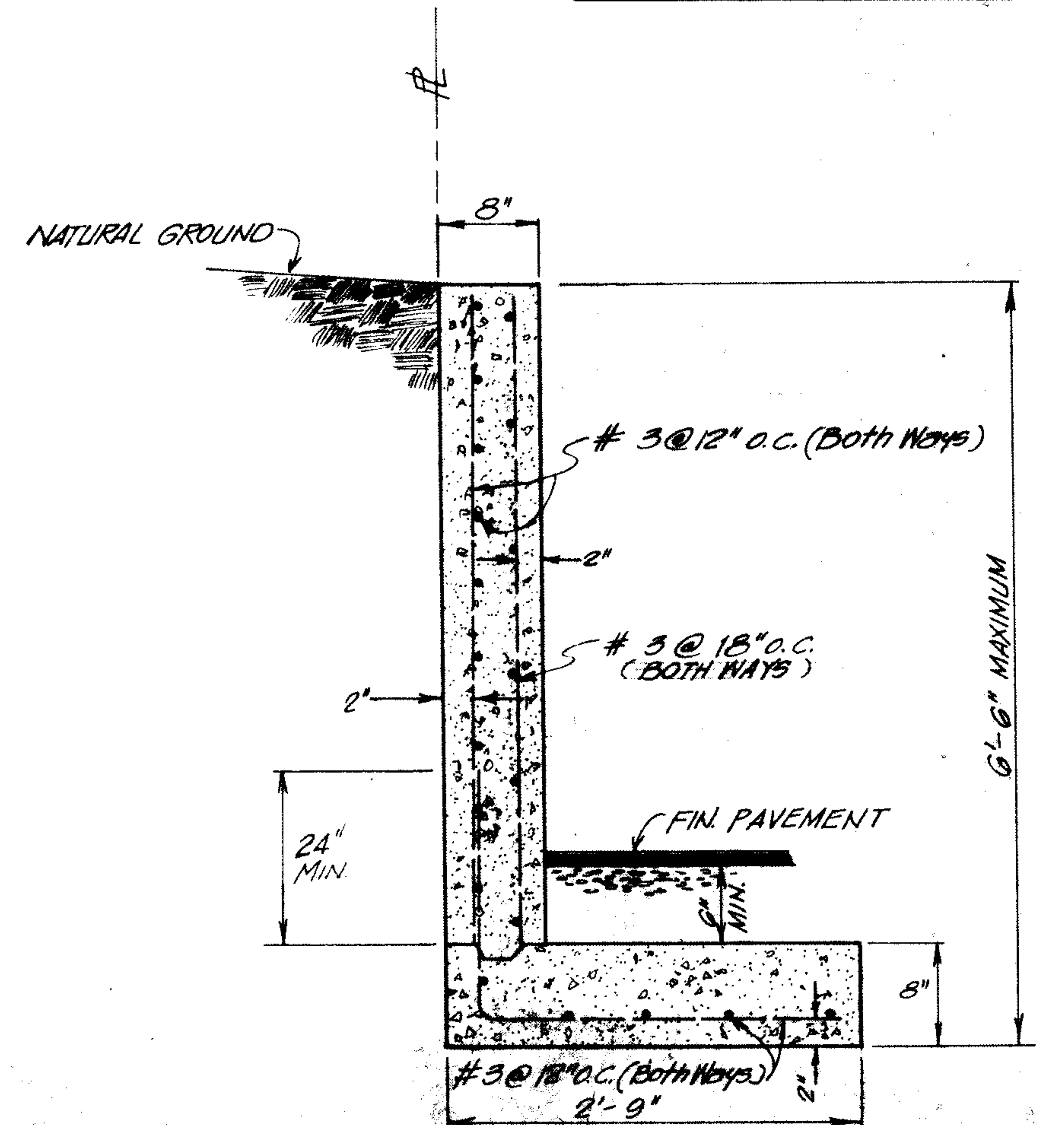
SECTION A-A



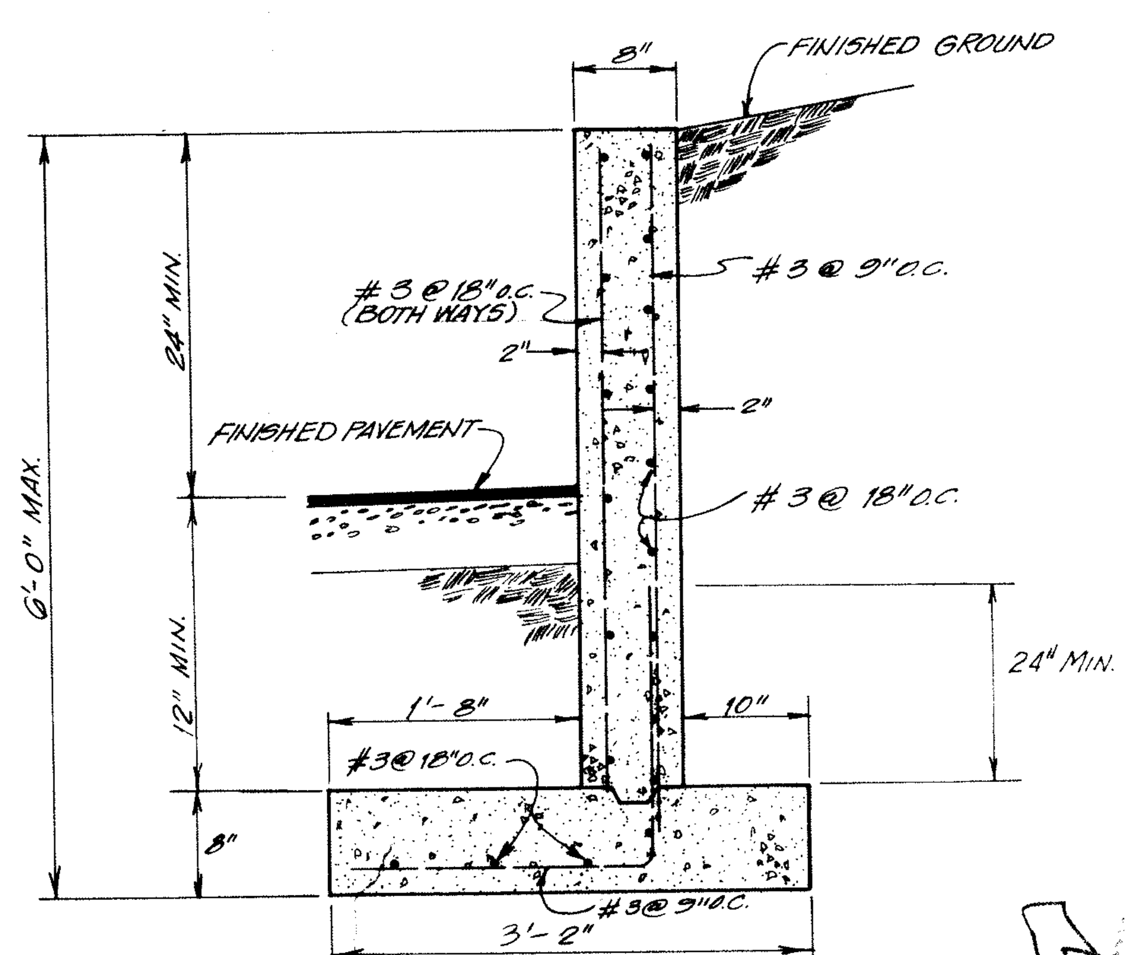
SIDEWALK AT PAVEMENT



SECTION B-B



RETAINING WALL C-C



RETAINING WALL D-D

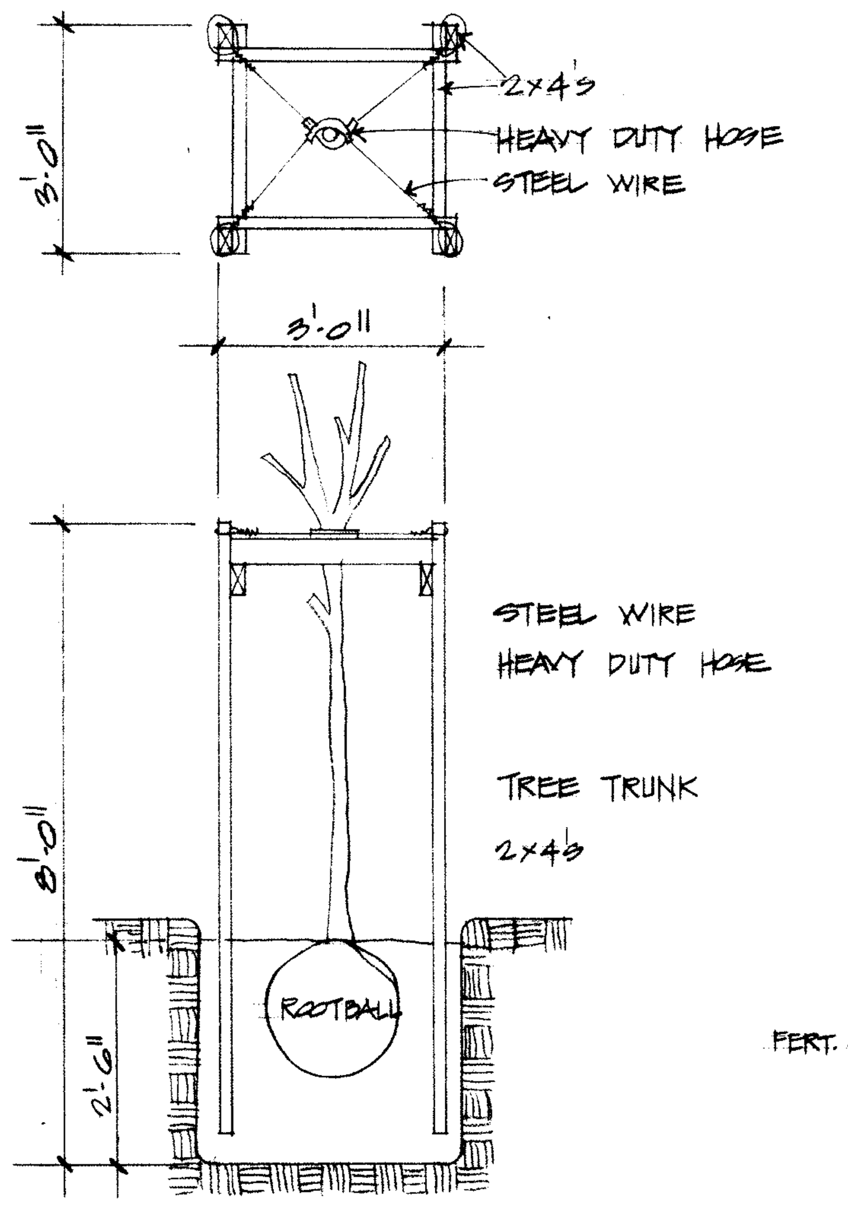
SITE ENGINEERING DETAILS

ralph c. bender & assoc. inc.
environmental planning • urban design • architecture
8026 vantage drive
san antonio texas 78230
phone : 512 · 342 · 3291

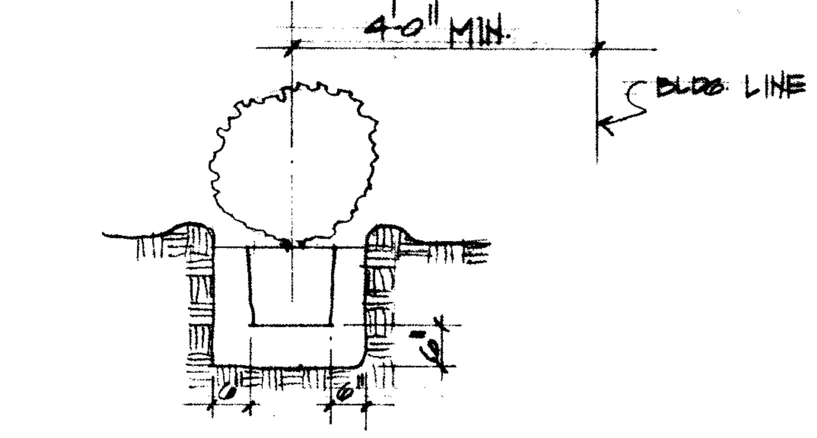
PROJECT
San Antonio Housing Authority
OWNER

PROJECT NUMBER:	7820
DRAWN:	Cor.
CHECKED:	L.S.
APPROVED:	F.S.
DATE:	3-21-78
REVISED:	

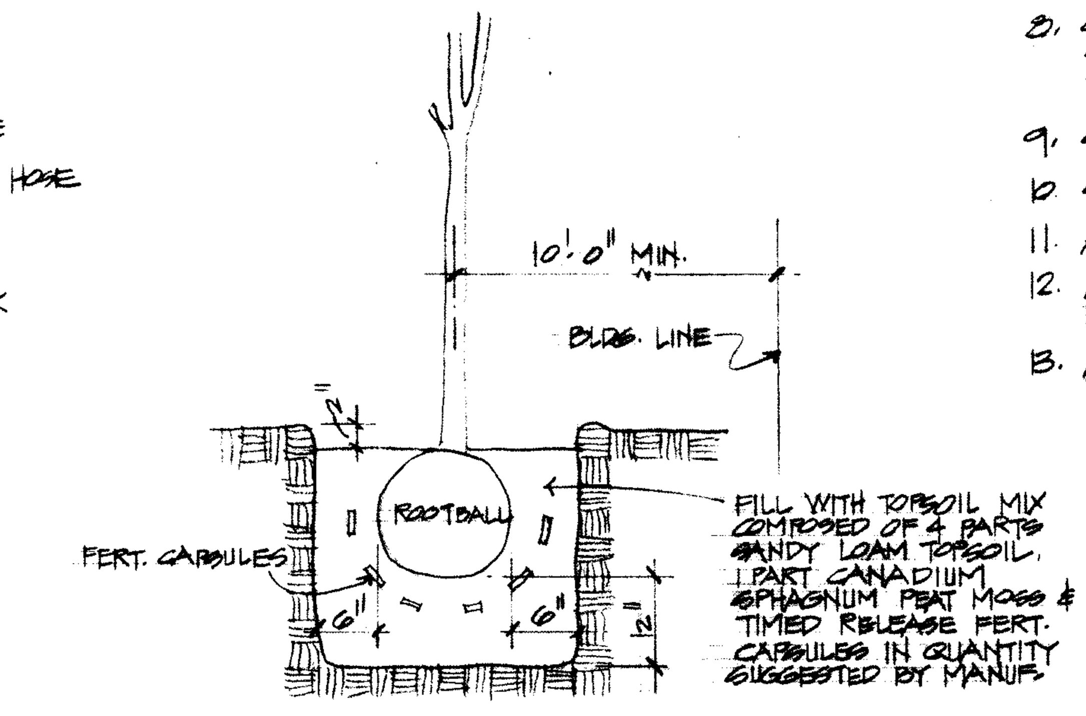
SHEET
6
OF 34



tree staking details



shrub planting detail



tree planting detail

GENERAL NOTES

1. TREE & SHRUB LOCATIONS ARE APPROX. ON THIS PLAN. ARCHITECT ON SITE TO DETERMINE EXACT LOCATIONS
2. MAINTAIN MIN. 4' CLEARANCE BETWEEN SHRUBS & BLDGS.
3. MAINTAIN MIN. 10' CLEARANCE BETWEEN TREES & BLDGS.
4. SOLID SOD TO EDGE ALL WALKS, DRIVES & CURBS W/ 12" WIDE MATS
5. SOLID SOD ALL SLOPES GREATER THAN 2 HORIZ. 1 VERT.
6. SOLID SOD DRAINAGE SWALES
7. SOLID SOD & SPRINGS REMAINDER OF GROUNDS AS NOTED
8. SOIL TO BE PLACED IN 6" LAYERS AROUND ROOT BALLS & ALLOWED TO SETTLE BY WATERING PROCESS CONTINUED UNTIL TREE WELL IS FILLED W/ SOIL TO LEVEL AS SHOWN IN DETAIL
9. SOIL ACIDIFIER TO BE "GREEN LIGHT" SOIL ACIDIFIER.
10. SHRUBS IN ROWS TO BE PLANTED IN TRENCHES 18" DEEP & 18" WIDE
11. ALL GRASS TO BE WATERED DAILY FOR 1ST TWO WEEKS AFTER PLANTING.
12. ALL TREE WELLS TO BE FILLED WITH A HIGH QUALITY LOAM SOIL FREE OF HERBICIDES, PESTICIDES, ETC.
13. ALL PLANT MATERIAL SHALL COMPLY W/ THE SPECIFICATIONS OUTLINED IN THE H.U.D. - FHA HANDBOOK, DET. 41403, DATA SHEET 50-101.

tree and shrub schedule

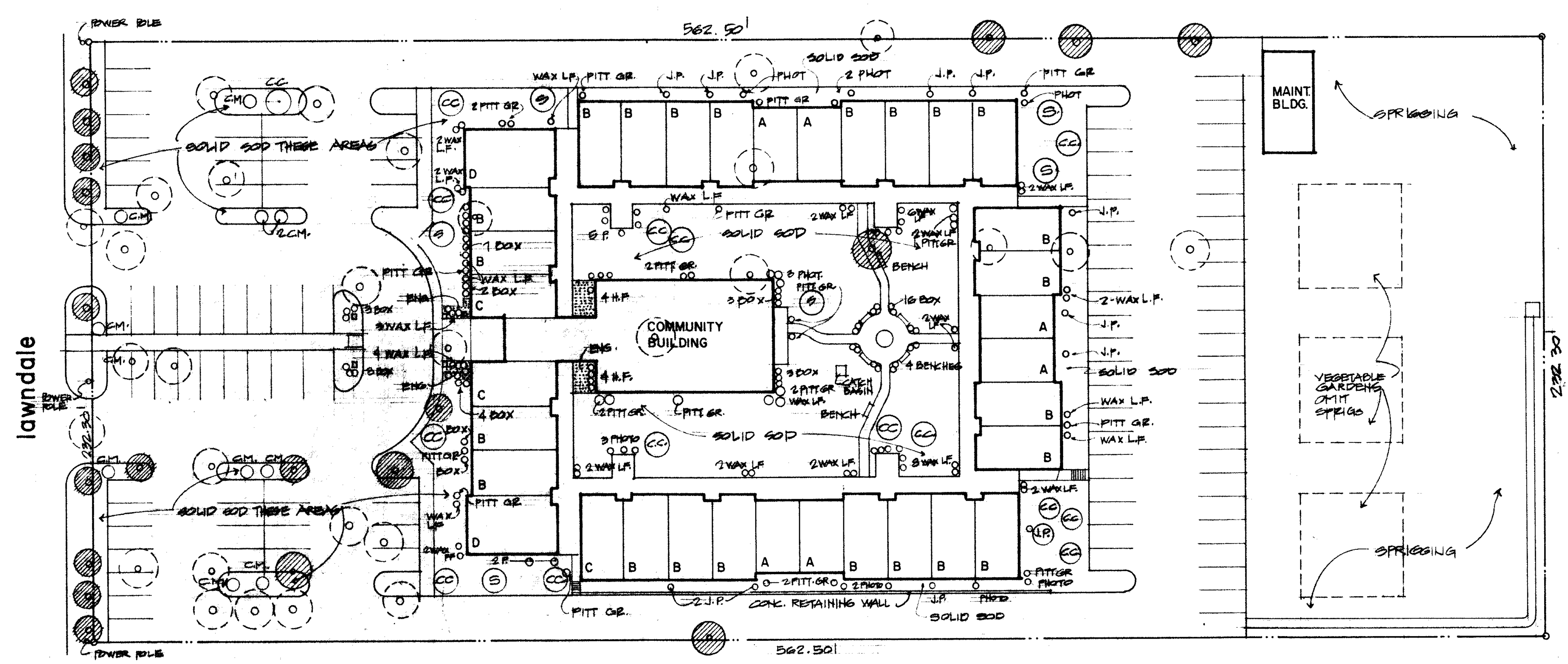
key	common name	scientific name	qnty	size and remarks
C.C.	COTTONLESS COTTONWOOD	POPULAI CANDICANS		1½" CALIP. 8'-10' B.B.
S	SYCAMORE	PLATANUS OCCIDENTALIS		1½" CALIP. 8'-10' B.B.
J.P.	JAPANESE PLUM	LOQUAT		1 GAL. 18"
P.	PITTOSPORUM VARIEGATED	PITTOSPORUM TOBIRA, VARIEGATED		1 GAL. 12" - 18"
C.M.	CRAPE MYRTLE MULTI-BRANCH	LAGERSTROEMIA MULTI-TRUNK		5 GAL. 30" - 36"
PITT. GR.	PITTOSPORUM GREEN	PITTOSPORUM TOBIRA, GREEN		1 GAL. 12" - 18"
BOX	JAPANESE BOXWOOD	BUXUS MICROPHYLIA JAPONICA		1 GAL. 12"
PHOT.	PHOTINIA	PHOTINIA FRASERI		1 GAL. 12" - 18"
WAX. LF.	WAXLEAF LIGUSTRUM	LIGUSTRUM, TEXANA		B & B 18" - 24"
	ST. AUGUSTINE	STENOTAPHRUM SECUNDATUM		SOLID SOD OR SPRIGGING AS SHOWN
H.F.	HOLLY FERN	CYRTOMIUM FALCATUM		
ENG.	ENGLISH IVY	HEDERA HELIX		

LEGEND

(CC) NEW TREE

EXISTING TREE TO REMAIN

EXISTING TREE TO BE REMOVED



landscape plan

ralph c. bender & assoc. inc.
environmental planning • urban design • architecture
8026 vantage drive
san antonio texas 78230
phone: 512 · 342 · 3291

PROJECT
[redacted]
OWNER

PROJECT NUMBER: 7820
DRAWN:
CHECKED:
APPROVED:
DATE: 3-21-78
REVISED:

SHEET 5 OF 54

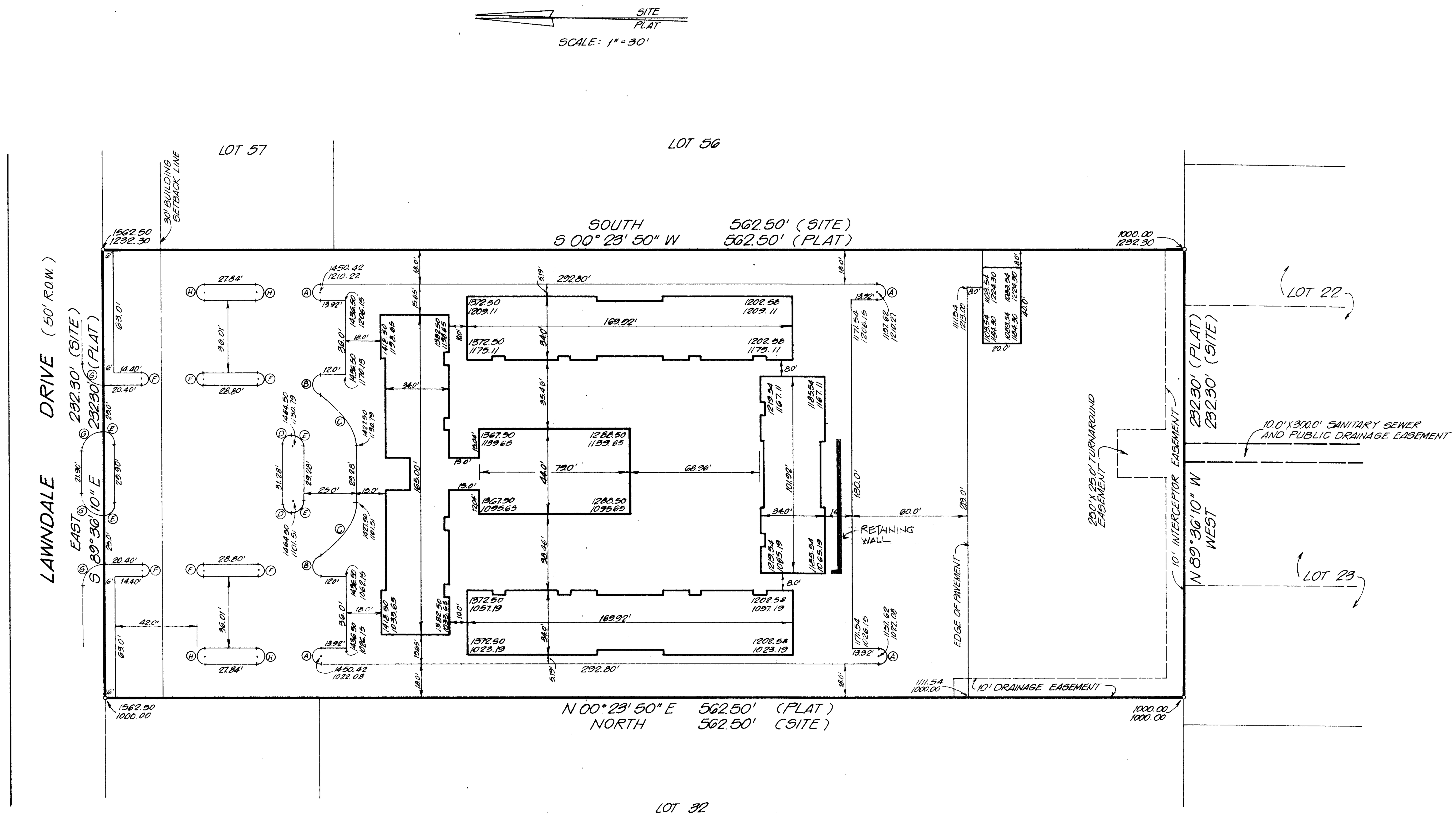
ralph c. bender & assoc. inc.
environmental planning • urban design • architecture
8026 vantage drive
san antonio texas 78230
phone: 512 · 342 · 3291

PROJECT
[redacted]
OWNER

PROJECT NUMBER:	7820
DRAWN:	Car
CHECKED:	L.S.
APPROVED:	F.S.
DATE:	3-21-78
REVISED:	

SHEET 4 OF 9

GRADING, PAVING & DRAINAGE PLAN



CURVE DATA				
CURVE	DELTA	RADIUS	TANGENT	LENGTH
A	180°00'00"	4.08'	–	12.32'
B	154°22'41"	6.00'	26.39'	16.17'
C	64°22'41"	31.00'	19.51'	34.83'
D	90°00'00"	5.00'	5.00'	7.85'
E	90°00'00"	6.00'	6.00'	9.42'
F	180°00'00"	3.60'	–	11.30'
G	90°00'00"	10.00'	10.00'	15.70'
H	180°00'00"	4.50'	–	14.14

NOTE:
BUILDINGS ARE DIMENSIONED FROM FACE OF FRAME.
CURBS ARE DIMENSIONED FROM FACE OF CURB.

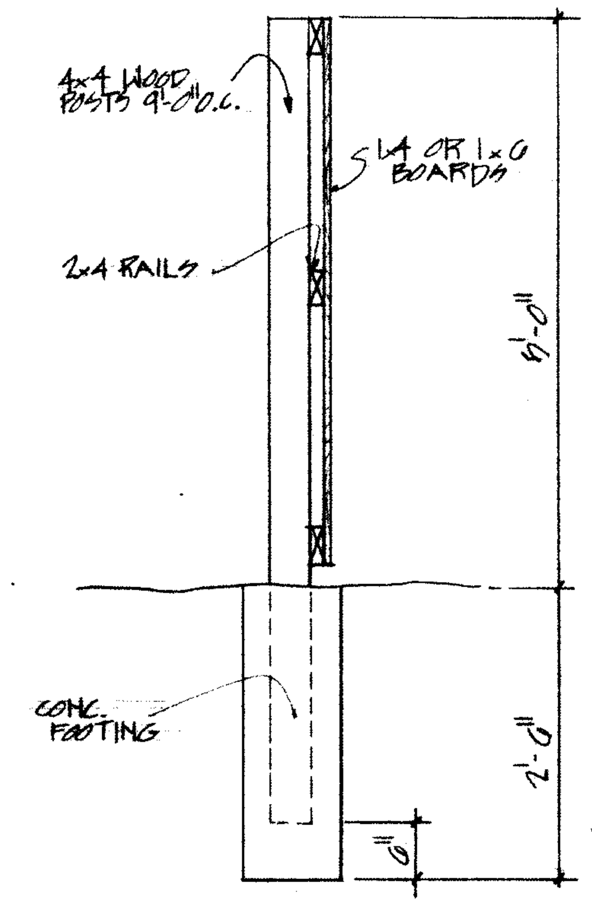
SITE STAKING PLAN

ralph c. bender & assoc. inc.
environmental planning • urban design • architecture
8026 vantage drive
san antonio
phone: 512 342-3291
texas 78230

PROJECT
San Antonio Housing Authority
100 UNIT ELDERLY PROJECT
LAWNDALE DRIVE
HUD PROJECT NO TEX 59-0007-004
OWNER

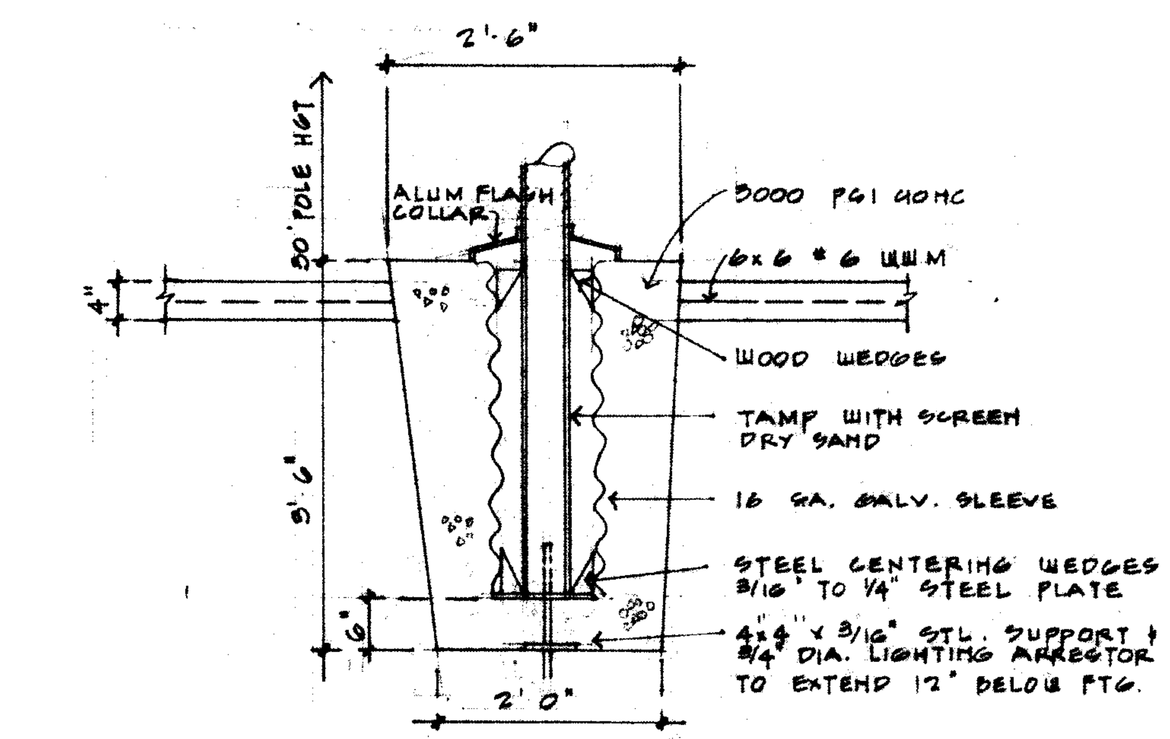
PROJECT NUMBER: 7820
DRAWN: Car.
CHECKED: L.S.
APPROVED: F.B.
DATE: 3-21-78
REVISED:

SHEET
3
OF 34



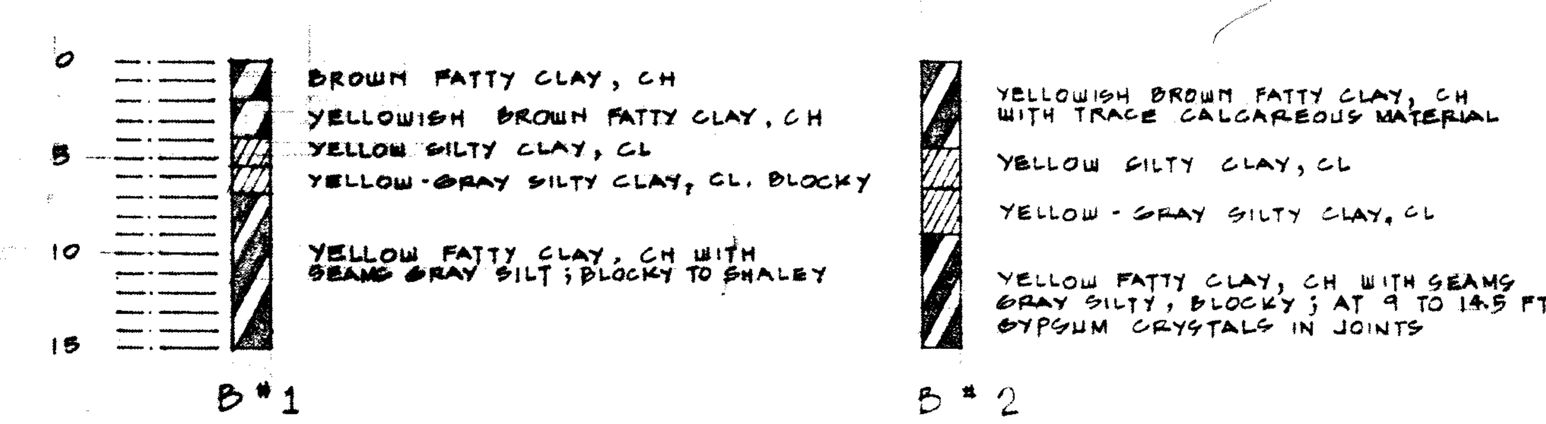
standard wood fence

SCALE: 3/4" = 1'-0"

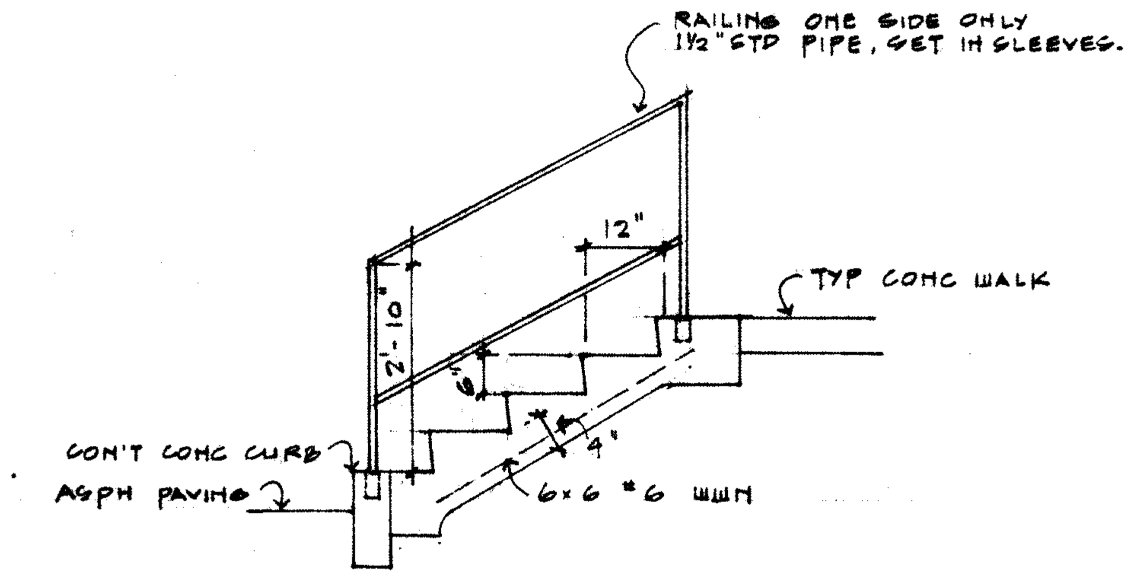


flagpole foundation det

NOT TO SCALE

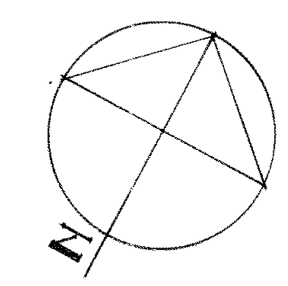


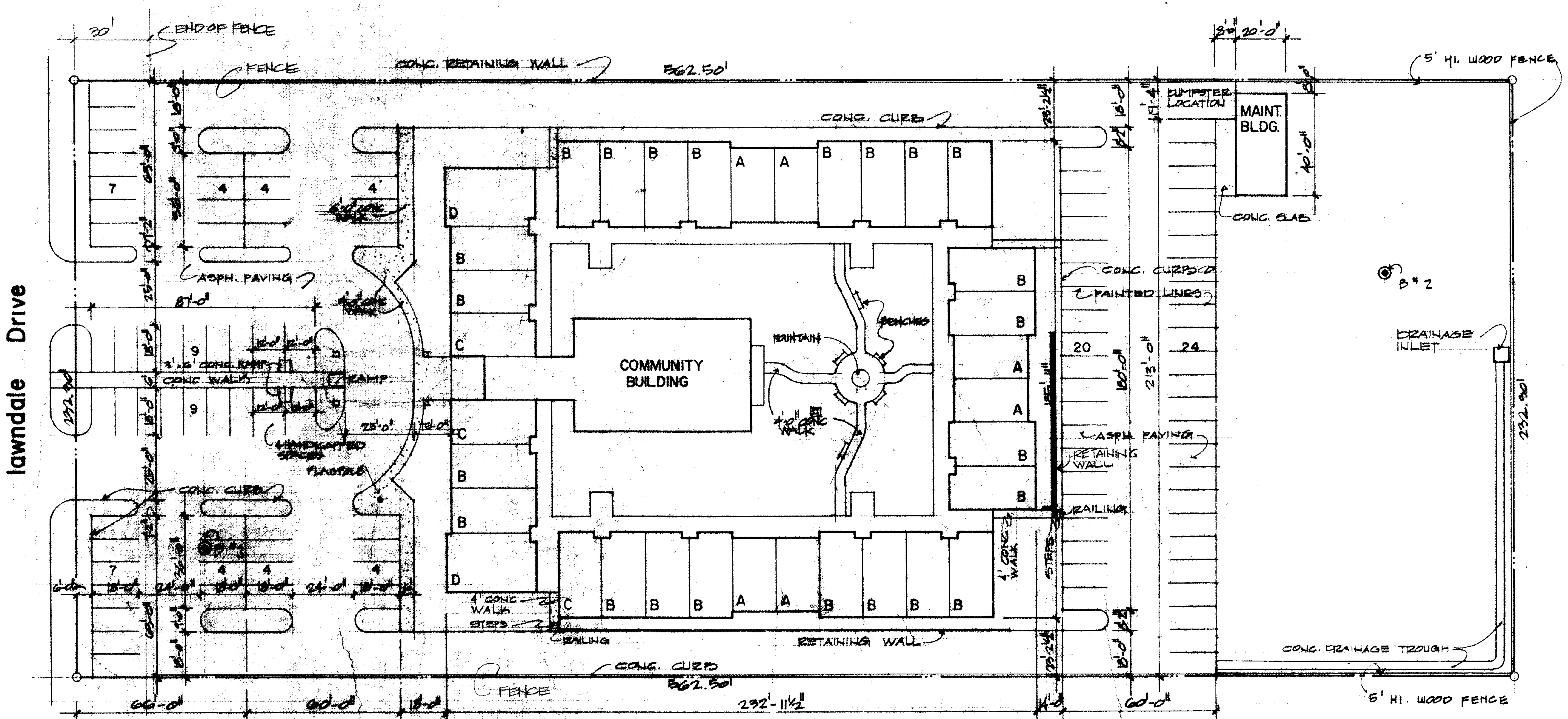
log of boring

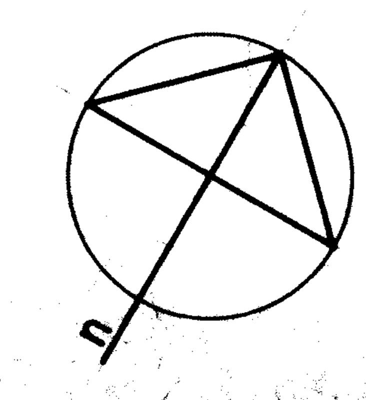


typ step det.

1/2" = 1'-0"







site plan

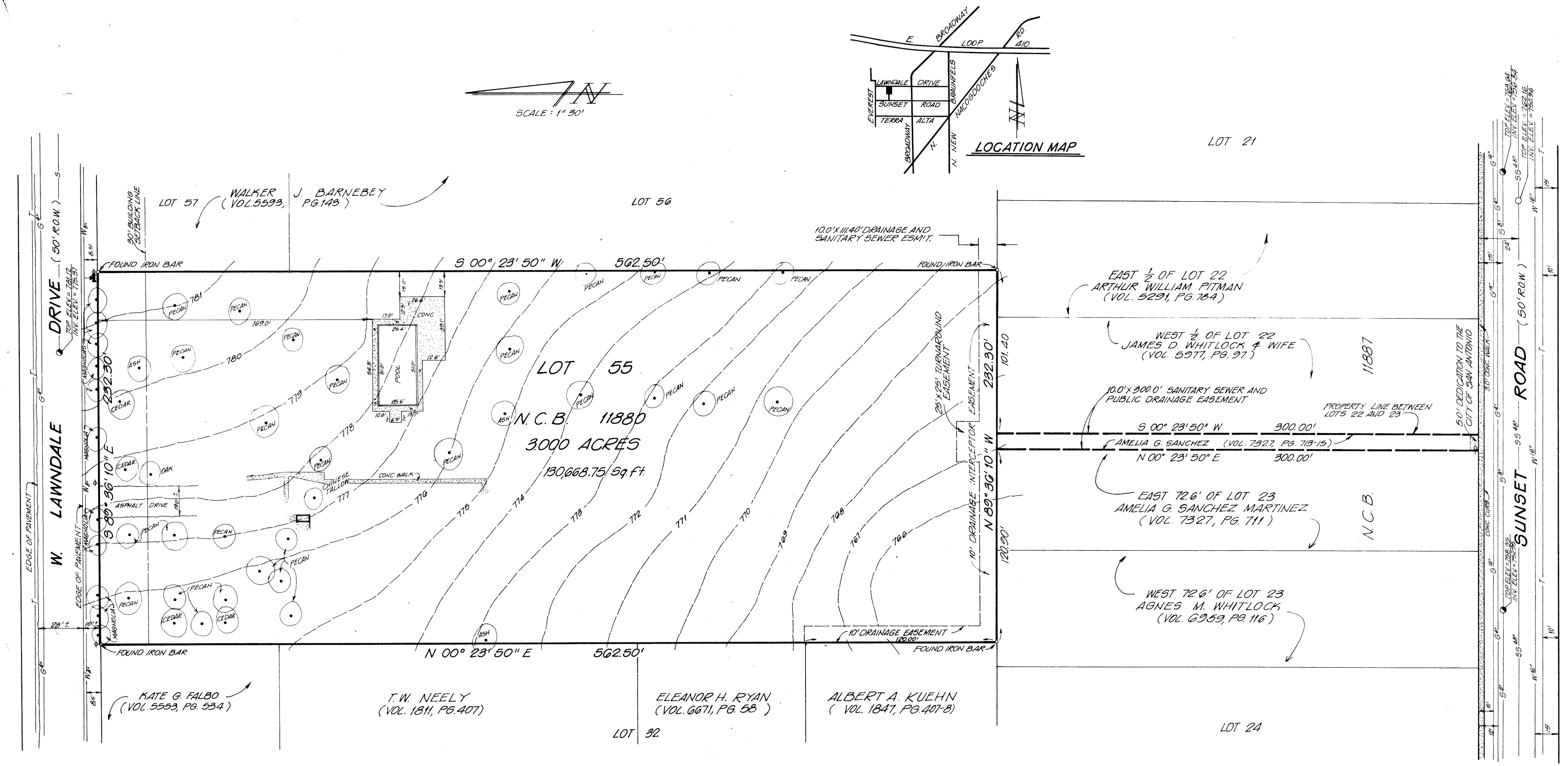
SCALE: 1" = 30'-0"

ralph c. bender & assoc. inc.
environmental planning • urban design • architecture
8026 vantage drive
san antonio texas 78230
phone: 512 342 3291

PROJECT
[redacted]
OWNER

PROJECT	
NUMBER:	1820
DRAWN:	
CHECKED:	
APPROVED:	
DATE:	3-21-78
REVISED:	

SHEET
2
OF 24



LEGEND

—T—	TELEPHONE LINE
—E—	ELECTRIC LINE
—W 6"—	WATER LINE
—SS—	STORM SEWER
—S—	SANITARY SEWER
	POWER POLE
	SANITARY SEWER MANHOLE
	STORM SEWER MANHOLE
	FIREHYDRANT
—G 4"—	GAS LINE

FIELDNOTES OF A SURVEY OF:

Lot 55, N.C.B. 11880, Olmos Park Heights Subdivision shown by Map of Record in Volume 8100 at Page 240 of the Plat Records of Bexar County, Texas, and out of the S. L. Gillette Survey No. 91, San Antonio, Bexar County, Texas; said Lot 55 being more particularly described by metes and bounds, as surveyed, as follows:

Beginning at an iron bar found set in the ground in the south right-of-way line of West Lawndale Drive, the northwest corner of Lot 55, N.C.B. 11880, Olmos Park Heights Subdivision shown by Map of Record in Volume 8100 at Page 240 of the Plat Records of Bexar County, Texas, and the northeast corner of Lot 32 of Olmos Park Heights Subdivision shown by Map of Record in Volume 980 at Page 29 of the Map Records of Bexar County, Texas, whence, the point of intersection of the south right-of-way line of West Lawndale Drive and the east right-of-way line of Everest Street bears N 89°36'10" W a distance of 394.00 feet;

Thence S 89°36'10" E with the south right-of-way line of West Lawndale Drive and the north boundary line of said Lot 55 a distance of 232.30 feet to an iron bar found set in the ground, the northeast corner of said Lot 55 and the northwest corner of Lot 57, Olmos Park Heights Subdivision shown by Map of Record in Volume 5940 at Page 110 of the Plat Records of Bexar County, Texas, for the northeast corner of this tract;

Thence S 0°23'50" W with the east boundary line of said Lot 55 and the west boundary line of said Lot 57, N.C.B. 11880, at 120.00 feet a point, the southwest corner of said Lot 57 and northwest corner of Lot 56 of said Olmos Park Heights Subdivision shown in Volume 5940 at Page 110; and continuing on the same course and by the same count with the east boundary line of said Lot 55 and the west boundary line of Lot 56, in all, a distance of 562.50 feet to an iron bar found set in the ground in the north boundary line of Lot 22 of Loma Vista Subdivision shown by Map of Record in Volume 642 at Page 265 of the Map Record of Bexar County, Texas, the southeast corner of said Lot 55 and the southwest corner of said Lot 56, for the southeast corner of this tract;

Thence N 89°36'10" W with the south boundary line of said Lot 55 and the north boundary line of Lot 22 and Lot 23 of said Loma Vista Subdivision a distance of 232.30 feet to an iron bar found set in the ground, the southwest corner of said Lot 55 and the southeast corner of Lot 32 of said Olmos Park Heights Subdivision shown in Volume 980 at Page 29, for the southwest corner of this tract;

Thence N 0°23'50" E with the west boundary line of said Lot 55 and the east boundary line of said Lot 32 a distance of 562.50 feet to the point of beginning.

Containing 3.000 acres (130,668.75 square feet) of land, more or less.

TO ALL PARTIES INTERESTED IN TITLE TO PREMISES SURVEYED:

WE, MAVERICK ENGINEERING COMPANY, HAVE MADE A TRANSIT SURVEY IN THE U.S. STANDARD OF MEASURE ON THE GROUND ON THE PROPERTY DESCRIBED ON THIS MAP AND HAVE FOUND ALL BEARINGS AND DISTANCES SHOWN TO BE TRUE AND CORRECT, ALL PROPERTY MONUMENTS SET AS SHOWN AND NO ENCROACHMENTS EITHER WAY ACROSS PROPERTY LINES.

BY: [signature]

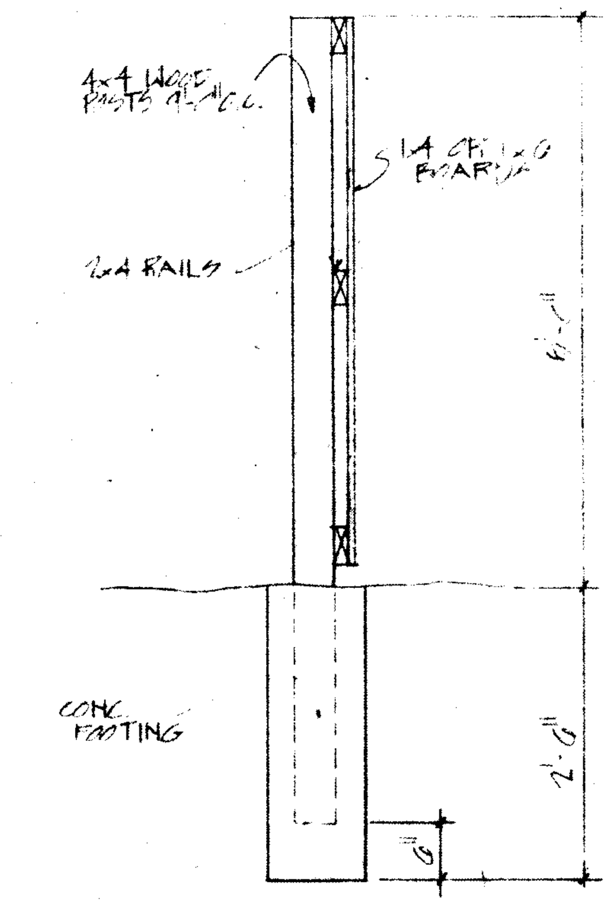
DATE SURVEYED: FEBRUARY 1978.

NO.	DATE	BY	REVISION	CKD	APPD
	3-15-78	NK			

MAVERICK ENGINEERING COMPANY
CORPUS CHRISTI, TEXAS
SAN ANTONIO, TEXAS

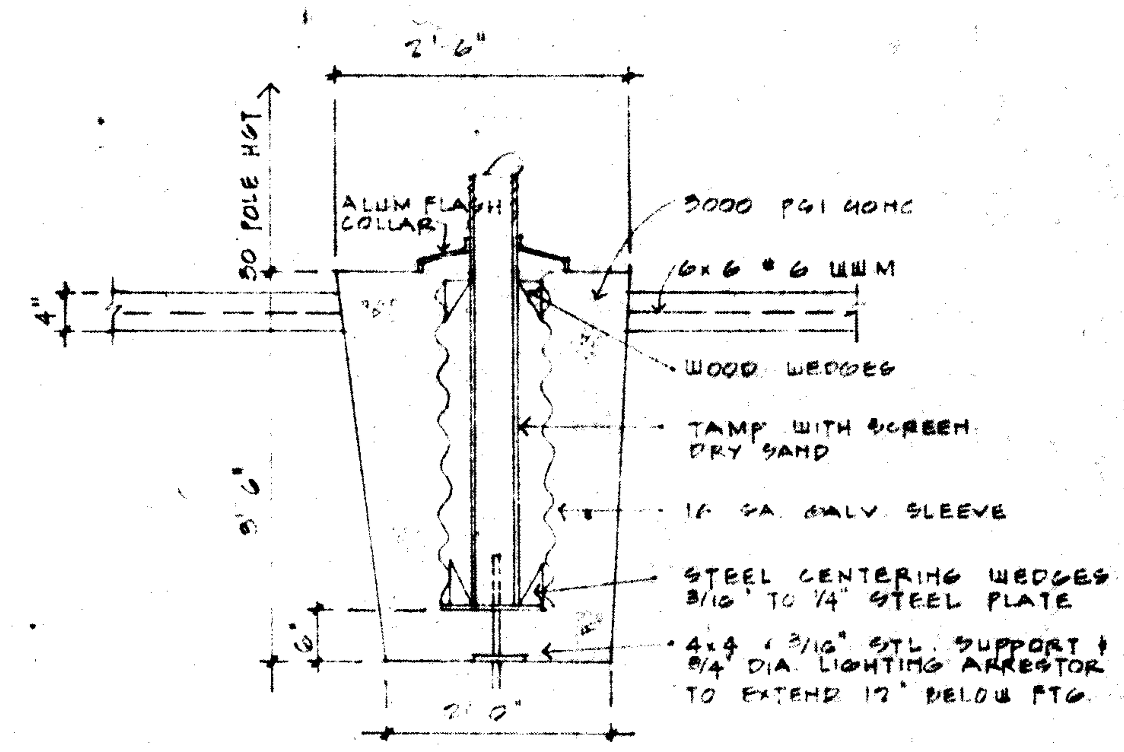
BOUNDARY & TOPOGRAPHIC SURVEY OF:
LOT 55, N.C.B. 11880
(3.000 ACRES)
OLMOS PARK HEIGHTS SUBDIVISION
SAN ANTONIO, BEXAR CO. TEXAS

DRAWN BY: CAR	CHKD BY: F.S.	APPROVED BY: F.S.
SCALE: 1" = 30'	DATE: FEB '78	SHEET 1 OF 1
REV. NO.	JOB NO. S-102,645	



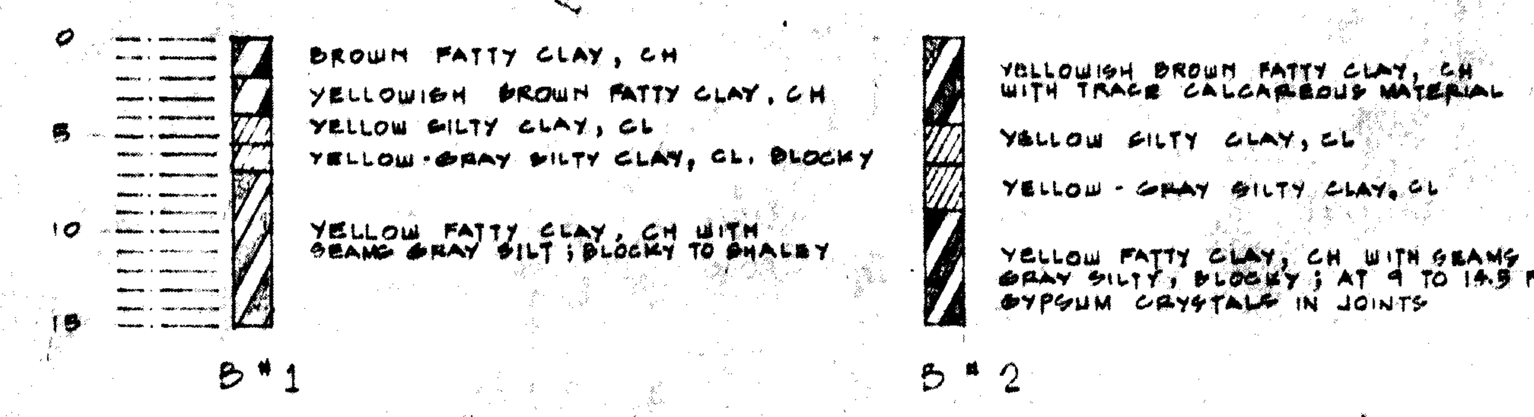
standard wood fence

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

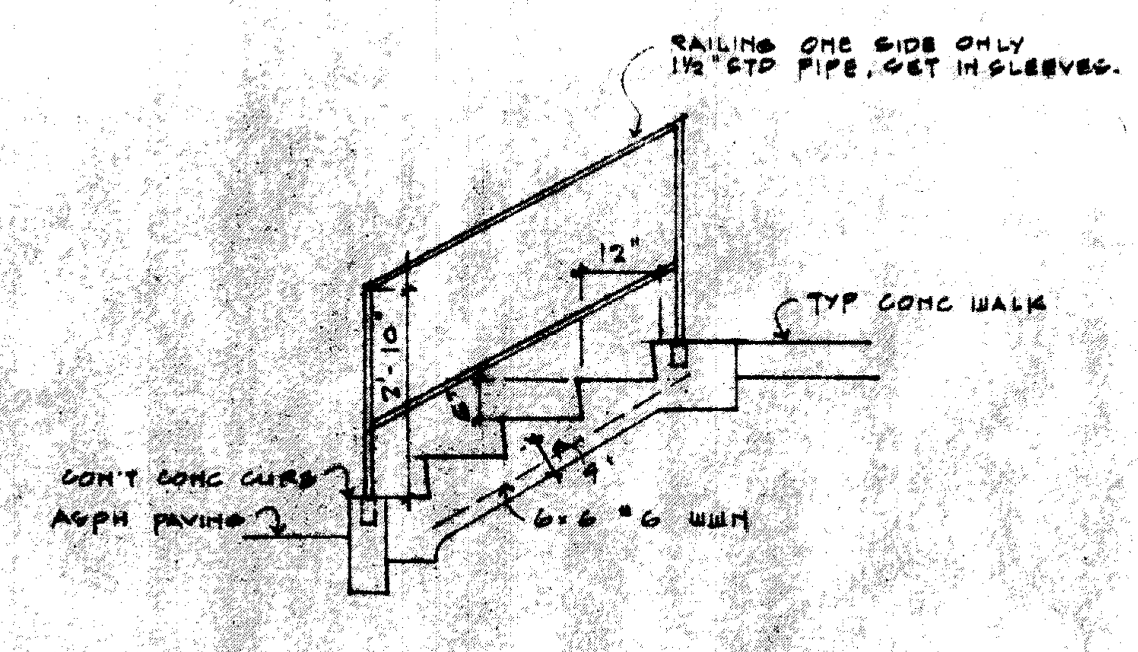


flagpole foundation det.

NOT TO SCALE

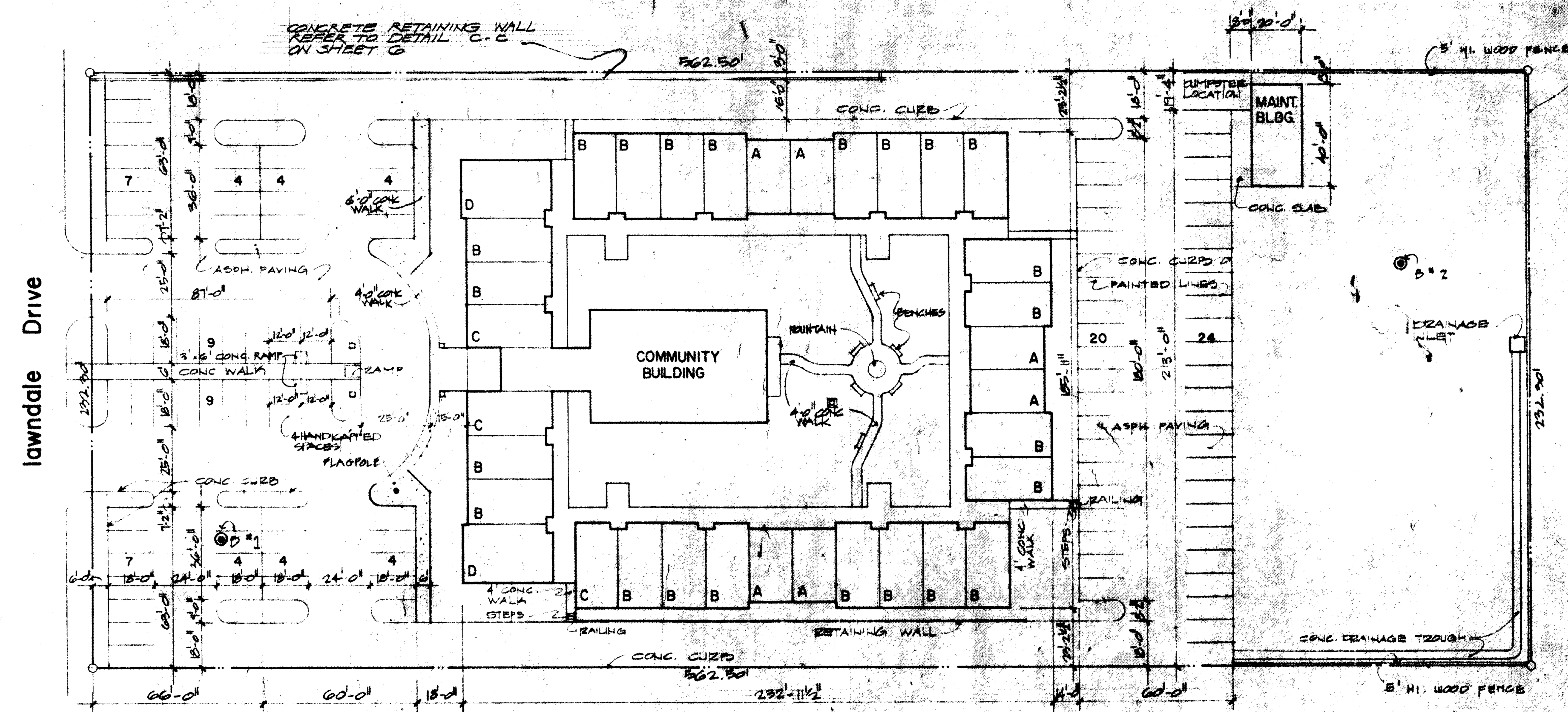


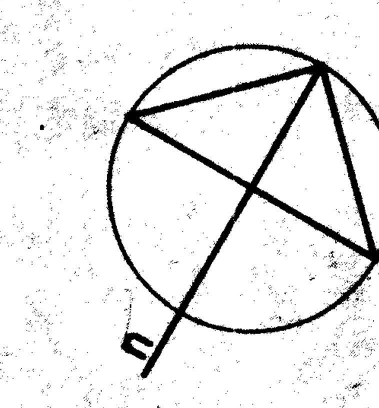
log of boring



typ step det.

1½" = 1'-0"





site plan

SCALE: 1" = 30'-0"

ralph c. bender & assoc. inc.
environmental planning • urban design • architecture
phone: 512 · 342 · 3291
texas 78230
san antonio

PROJECT
San Antonio Housing Authority
100 UNIT ELDERLY PROJECT
LAWNDALE DRIVE
HUD PROJECT NO TEX 59-0007
OWNER

PROJECT NUMBER:	820
DRAWN:	
CHECKED:	
APPROVED:	
DATE:	4-24-73
REVISED:	

SHEET 2 OF 2

ralph c. bender & assoc. inc.
environmental planning • urban design • architecture
phone: 512 342-3291
san antonio texas 78230

PROJECT
San [redacted]
OWNER

PROJECT NUMBER: 7820
DRAWN:
CHECKED:
APPROVED:
DATE: 4-24-78
REVISED:

SHEET 1 OF 2

SAN ANTONIO HOUSING AUTHORITY

100 UNIT ELDERLY PROJECT

LAWNDALE DRIVE — SAN ANTONIO, TEXAS

HUD PROJECT NO. TEX. 59-0007-004

approvals

architect : ralph c. bender & assoc. inc.
by : ____________
title: ____________

purchaser : san antonio housing authority
by : ____________
title : ____________

seller : lee - jackson - turner inc.
by : ____________
title : ____________

san antonio hud insuring office
by : ____________
tite : ____________
date : ____________

ralph c. bender & assoc. inc.
environmental planning • urban design • architecture
8026 vantage drive — phone : 512·342·3291
san antonio — texas , 78230

area legend

type	no. units	unit area	total
unit A	18	493	8874
unit B & B-1	69	572	39,468
unit C & C-1	9	572	5148
unit D	4	820	3280
totals	100		56,770
community bldg. & public spaces			4966
maint. bldg.			800

drawing index