

appendix B

DETAILED DESCRIPTION OF PROPOSED PROJECT PLAN

The following grouping of projects, structured and organized to suggest an approach for achieving improvements in the Fraternity's residence, are descriptive in nature. Projects have been organized on the basis of technical priority and criticality from a professional/architectural point of view. The Project Plan can be modified on the basis of available funding, and the values and priorities of the Fraternity.

None of the project descriptions should be interpreted as project specifications or scope of work statements, they simply explain the nature of the project and suggest a general course of action.

1. ROOF REPAIRS

Of prime importance is the need to repair the main roof of the house in order to avoid any further damage to the house, its structure, and subsystems. Repair of less critical items before repair of the roof may very well be damaged from roof leaks and related problems.

Included within this package are the following major work items:

- a. Main roof gutters and flashing: Evidence indicates that a portion of the roof leak problems are a result of defective and deteriorated gutters, leaders and flashing.
- b. Replace rotten wood, framing and fascia: In connection with reparation of the roof gutters, inspection of the structure supporting the roof and the gutter assembly should be made to determine whether the leaks have deteriorated these members. If so, deteriorated wood should be replaced before completion of gutter repair.
- c. Repair defective slate shingles: It is apparent that several

roof shingles are split and deteriorated and should be replaced. However, this problem is not the primary contributor to the major roof leaks and roof deterioration.

- d. Repair and paint fascias and trim: This item is primarily a maintenance item, however, it does not make sense to make these repairs until the cause for further damage has been eliminated. It is recommended that this work be included in the primary roof repair contract, however, it is possible that this item can be performed by the fraternity.
- e. Leader heat cables: It has been observed that even in the recently repaired east gutter, water and ice do not flow out of the gutter. From discussions with the house manager, it is likely that the flow of water in the winter is blocked by ice forming within the leaders, or that leaves have blocked water flow. Installation of heating cables in the leaders will help to alleviate this problem. Gutters and leaders should be cleaned every year at the end of Autumn.

NOTE. In association with this roof repair work, it is recommended that proper insulation and ventilation of the attic space and roof rafter be performed as a method to help alleviate the ice damming problem. If this attic work is not undertaken at the time of the roof repairs, it is recommended that heating cable be installed in the gutters and partially up the roof slope as well as down the leaders in order to allow for proper drainage of the roof in the winter.

- f. Garage roof: Garage roof repair work items essentially consists of the same items identified above. It is possible to divide and contract the main roof repair separate from the garage roof work which may be performed at different times depending on money availability. However, it is recommended that the two roof repair projects be contracted and performed at the same time.

2. FOUNDATION STRUCTURAL PROBLEM CORRECTION

Stabilization of the exterior envelope requires that the structure supporting this envelope first be stabilized. This Package includes work items directly related to support of the exterior walls.

- a. Chimney foundations: The fireplace chimneys are a major

element affecting the exterior envelope. Chimney foundations should be inspected and repaired to prevent any possible damage to the exterior masonry.

- b. Foundation related to interior structure: Support of the major interior structural components are directly related to the exterior masonry veneer. Foundation defects which relate to exterior walls should be repaired.

NOTE. It is recommended that a detailed engineering investigation and analysis of the major structural problem be undertaken to accurately identify all the problems and to specify the appropriate corrective actions required.

- c. Window Wells: It is apparent that deterioration and water penetration occurs at the casement window locations. Deterioration of the foundation at these locations can have significant affect on the exterior masonry. The window wells should be structurally repaired and sealed to prevent further water damage.

NOTE. It is noticed that the existing driveway on the east side of the house has a slight pitch toward the house. This problem may contribute to the water penetration and deterioration of the foundation at the window wells. It is recommended that site drainage work be performed in association with repair of the window wells and the exterior foundation.

It is also noted that existing surface drains along the east side walks are clogged. These drains should be cleaned and worked into any new site drainage work.

- d. Correct terrace foundations: It appears that the terrace foundations and columns are being affected by frost. Since collapse of the terrace structure can severely damage the exterior and possibly the interior of the main house, it is suggested that the terrace foundations be stabilized in connection with the other foundation repairs.

3. EXTERIOR MASONRY REPAIR

Once the roof and foundation problems related to the exterior masonry have been corrected, it is next appropriate to repair the defective exterior envelope to avoid further damage to the interior of the residence.

- a. Masonry wall repairs: This item consists primarily of repairing all loose bricks, mortar, foundation cap stones and rectification of any deteriorated wall surfaces and structural problems in the masonry wall.
- b. Terrace curbs and paving: Although this item does not directly affect the stability of the house envelope itself, it is appropriate to include terrace curbs and paving in this package as a related masonry item. It can, however, be delayed to a later date or the work can be performed by the Owner.
- c. Garage masonry: It is appropriate to include the repair of the garage masonry in this package. This work should not be done until the garage roof problems have been solved.

4. REPAIR EXTERIOR DOORS AND WINDOWS

Work included within this package is primarily related to repairing any defective or damaged doors and windows which might allow rain to enter the residence causing other damage.

5. REPAIR FLAT ROOFS

This Project Package consists of work related to the repair and correction of the defective flat roofs attached to the main structure of the residence at the ground level.

- a. Repair structures: In association with the repair of the roofing and gutter materials themselves, it is first necessary to be assured that the wood roof structures and

columns are intact and sound. Inspect and replace any rotten or deteriorating wood members.

- b. Roofing, flashing, gutters and leaders: The gutter for the flat roofs are constructed within the structure of the roofs. It is apparent that the pitch on the flat roofs and within the gutters is not sufficient to provide positive drainage of water from the roof. This work includes reforming of the gutters and the roof pitch and installation of new roofing material. A minimum pitch of 1/8" per foot should be allowed in construction of the new roofing.

Also at this time it is necessary to install new or repair the existing leaders.

- c. Repair and paint wood, fascias and trim: Once the roof leak problems have been eliminated, appropriate repair of the wood trim, ceilings, columns and fascias can be performed. Any rotted wood should be replaced prior to painting.

6. STABILIZE INTERIOR STRUCTURE

Once the exterior envelope of the residence has been repaired and the possibility of damage occurring to the interior due to water penetration has been eliminated, it is feasible to begin rectifying the internal problems.

Many of the visible interior problems and defects, however, appear to be directly related to the instability of the main structural elements within the house. It is recommended that interior structural problems be corrected before significant work is done to improve finishes and interior facilities.

- a. Central structure: It is our judgement that the interior structure of the residence has settled and deflected. Of primary importance before other interior work is performed is work related to stopping any further settlement of the house structure. Work within this package would include:
- o Stabilization of column and beam supports
 - o Stabilization of joists supports
 - o Repair deteriorated foundation supporting interior structure.

- b. Detailed engineering analysis: It is recommended that a detailed engineering analysis of the structural problems be performed in order to completely identify all the contributing problems and conditions and to specify the appropriate corrective actions required.
- c. First floor joists: Floor deflection is attributable to the numerous defective floor joists. Damaged and defective joists should be replaced and the end bearing conditions for all joists stabilized.
- d. Blocking: Solid blocking should be installed between all first floor joists, after the installation of new joists, to prevent twisting and racking of the joists.

7. ELECTRICAL CORRECTIONS

Once the exterior envelope and the interior structures to the residence have been stabilized, other interior work can proceed with relative assurance that proceeding work will not be damaged or affected by deterioration problems.

Of next immediate need, is to correct the most severe electrical problems since many of these problems can cause a threat to the safety of the inhabitants. Items a and b are the most important in terms of life safety, but all electrical work has been included within this package for ease of classification.

- a. Main Panel and Distribution Systems: The primary electrical services within the residence are old, severely deteriorated in some locations, may cause potential fire hazards, and are inappropriate and unacceptable for the use of the residence.

This work item focuses on correcting the major electrical problems and attempts to solve the present and future electrical needs of the residence. Work would include the installation of new panels, pull boxes, new wiring, additional circuits, adequately sized circuits, new outlets, new lighting, and general rectification of many of the existing electrical problems.

- b. Fire alarm electrical problems: Also related to the safety of the residence occupants is the correction of several electrical problems related to the fire alarm system. Work would include the installation of new heat detectors, fire

alarm pull stations, emergency lighting. Renovation work such as this within existing structures must conform with existing codes and regulations.

The following electrical items are included in this section for the ease of classifying the work, but are not as important as the preceding two items.

- c. Electric heat: Heat is not provided in several rooms. It would be significantly more costly and difficult to extend the existing steam heating system to these rooms and provide adequate control. It is therefore recommended that electrical heat be provided with independent thermostats in all spaces without heat and in areas where existing heat is insufficient.
- d. Correct unsafe lighting and wiring: There are several locations where unsafe wiring exists which would not necessarily be corrected under item 8a above. These conditions may be corrected at any time, but the conditions should not be allowed to continue for any extended period of time.
- e. Miscellaneous electrical: There are several minor electrical problems which can be cheaply and easily corrected by the owner, such as installing outlet plates, correcting switching problems, etc.
- f. During the correction of the major electrical problems, electrical services should be allotted for the future kitchen renovation. Actual electrical work related to the kitchen renovation need not be done until the time of that project.

8. STAIR REPAIRS

The existing condition of the stairs within the residence presents a potential safety hazard. In particular, the main stair is especially dangerous.

All defective stair structure and supports should be corrected to assure adequate structural safety. It is apparent that some of the structural problems within the main stair are related to the structural settlement and deflection of the interior of the house. It is therefore recommended that the structural repair of the stair not take place until the residence structure has been stabilized.

Repair of the railing structure should not take place until the stair structure has been repaired. It is understood that the house manager has obtained an estimate for repairing the railing and that this cost is significant. Any attempts to match the existing wood work detailing in the existing stair will be expensive. It may be more economically feasible to replace the entire railing assembly with new materials that will be in keeping with the existing detailing in the residence.

Also included within this package are the miscellaneous repairs to the other stairs within the residence. However, these items can be attacked at any time and do not depend upon any other work in this package.

9. FIRE SAFETY PROBLEMS

- a. Installation of fire doors: This package includes the installation of the five fire doors required by the fire inspector. It may be appropriate at this time to also install fire doors in other applicable locations for added fire safety.
- b. Hazards and Protection: Several fire hazards and protection inadequacies were observed. Before a significant amount of work is done within the residence to improve living conditions and efficiencies, it is recommended that the problems relating to the life safety and fire protection of the occupants be rectified. Work would include proper installation of fire extinguishers and removal of exit hazards. One will note that many of the Fire Safety Problems previously identified are covered under the Electrical work and work related to the Stair repair.

10. HEATING PLUMBING AND VENTILATION

- a. Repair heating system defects: This work item will be a relatively expensive and involved project. It is suggested that no repairs related to fixing up the appearance of the residence, walls, ceilings, kitchen and bathrooms be done until after this work is completed as many of the walls and ceilings may have to be opened.

If and when repairs to the heating system are undertaken, it is recommended that some type of thermostatic control be installed on the radiators. This will not only allow for better control of heat within each room, it may produce significant energy savings.

Other options of course exist for upgrading the heating system.

1. The present steam heating system can be converted to hot water system.
2. The existing system can be removed completely and new electric heat installed.

Since this is an expensive and involved project regardless of the type of heat systems, it is recommended that a detailed investigation of the system and the feasibility of the options be studied before any major work is begun.

- b. Improve water heater capacity: The importance and value of improving the water heater's capacities must be established by the Owner. How much of a problem is this?

Work should be done in conjunction with the upgrading of the plumbing system.

- c. Renovate bath facilities: The primary problem with the existing bath facilities, other than those problems related to plumbing fixture and piping defects, is that they are inappropriate for the use they receive. Bath facility renovation would include a reorganization and redesign of the facilities in order to accommodate efficiently a number of people.

It would be highly desirable to accomplish this type of work in conjunction with the upgrading of the plumbing system.

- d. Upgrade plumbing system: It is obvious from our investigation and from discussions with the house manager, that the existing plumbing system is in extremely poor condition. It is now at the state and frequent maintenance and emergency repairs may become increasingly more complex and expensive. It is also apparent that plumbing leaks have and will continue to damage other rooms and finishes and structures in the residence.

It is recommended that a complete overhaul of the plumbing system be performed and that this work be done before significant amounts of money is spent on repairs to the interior finishes of the residence and before any major renovations are done to any of the spaces in the residence.

- e. Bath ventilation: Lack of proper ventilation in the bathrooms has been a major contributor to the deterioration and maintenance problems of these spaces. If and when renovation of the baths is undertaken, it is recommended that ventilating exhausts be incorporated to reduce the build-up of moisture in the rooms and to alleviate the mold problem.

Ventilation of the kitchen and waiter's kitchen should be performed in association with the renovation of these spaces.

11. ENERGY CONSERVATION

- a. Attic ventilation and insulation: Our investigation reveals that some of the problem causes to the roof deterioration and ice damming problem can be attributed to the lack of proper insulation and ventilation of the attic.

The existing insulation in the roof rafters is not accomplishing much good, since, apparently there exists no insulation in the dormers and roof rafters below the level of the attic floor. Heat from the third floor is heating the attic space and the roof rafter over the third floor rooms is causing the snow to melt from the roof. When the water reaches a portion of the roof without heat, the water re-freezes and forms ice dams.

Proper insulation and ventilation of the roof should be so designed and installed to capture the heat and retain it within inhabited spaces. Ventilation of the spaces above the insulation (within rafter spaces and above insulation in the attic floor) would help to prevent the snow from melting on the roof. If the snow is kept from melting in below freezing temperatures, the ice damming and resultant damage would be virtually eliminated.

It is highly recommended that if this type of work is not done, that an electric heating cable be installed in the gutter, partially up the roof slopes and into the leaders to alleviate any further damage due to ice damming.

- b. Install Storm window and doors: This project is an obvious energy conservation method. Its position within the overall capital improvement plan should be determined by the availability of money for nonessential work, however, this work should not be done until the existing defective doors and windows are repaired adequately.
- c. Install air locks at the main entrances: This project is a "not so obvious" energy conservation task. It involves the construction of "air locks" at the three most heavily used entrances to the residence.
 - o Enclose the west terrace
 - o Install an air lock either within the main structure of the residence at the entrance in room 103A or on the exterior of the structure at this door
 - o Convert the rear patio at the exterior door in the kitchen into an air lock.

The benefit received from this action would be in energy savings due to lost heat when the doors are opened in the winter. Considering the number of people living in the house and the number of times a day that the doors are opened and closed, it is possible that significant savings could be realized in the heating bills.

12. KITCHEN RENOVATION

While the proposed kitchen renovation plan is in general acceptable we recommend that some minor modifications be made in the overall plan. These modifications, in our opinion will not affect or modify our recommendations listed below.

- a. Stove extinguishing system: At the present time the extinguishing components are located above the filters and the fire inspector had recommended that the extinguishing system be lowered and brought outside from the filters.

- b. Electrical: The kitchen area is in need of improved electrical services for both lighting and equipment. Such improvements should occur at the same time that other electrical contracting work is being undertaken, even though the actual kitchen renovation area can occur later. Electrical services to new equipment locations ventilation fans, exit signs, and light fixtures are just a few of the required items. In addition, the number of receptacles need to be increased around counter areas.
- c. Primary renovation: This category includes new equipment such as cabinets, counters, refrigerators, furnishing, meat-slicers, etc. In addition, an independent flue connection to the stove and independent ventilation from the waiter's kitchen is also included. This category of the work can be included in one or several packages, however, the major discrepancies between our analysis and the proposed renovation plan is the assumed quality of the materials and equipment. We are convinced that the present quality level will require another kitchen renovation within 5 to 10 years. Therefore, our recommendation is to obtain more commercial type of cabinets counters and equipment which can withstand the wear and use evident within the residence.
- d. Flooring: The present proposal for the flooring is also questionable. We recommend at minimum a quarry tile flooring, which can be installed at a later time, and does not have to be contracted at the same time as item (c) above. This increase in quality will not only improve the maintenance and safety of the floor, but will be in the long run the most economical solution.

13. INTERIOR FINISHES

Of least importance, in our opinion, within the overall context of the problems identified, is the general upgrading of the interior finishes and casework. It is apparent that many of the visible defects in the walls, floors ceilings and finishes is a direct result of some of the more serious problems already identified. As is evident in room 204, for example, repair of the cracks in the plaster walls did not and will not do any good until the settlement of the interior structure is arrested. Installation of the slate floor at the front entry in room 103 to correct one floor problem has generated another floor problem because the deflection of the floor structure was not corrected first. It does not make economic sense to completely renovate the kitchen if the leaks in the ceiling continue.

It is therefore, our recommendation that major repairs to the interior finishes within the residence be one of the last items to be performed, except, of course, for those emergency conditions which may arise.

One will note that the repair of the evidence to a particular problem is not necessarily accomplished during the repair of the actual problem. For example, it is not required that the cracks which indicate structural settlement be repaired along with repair of the structural problem.