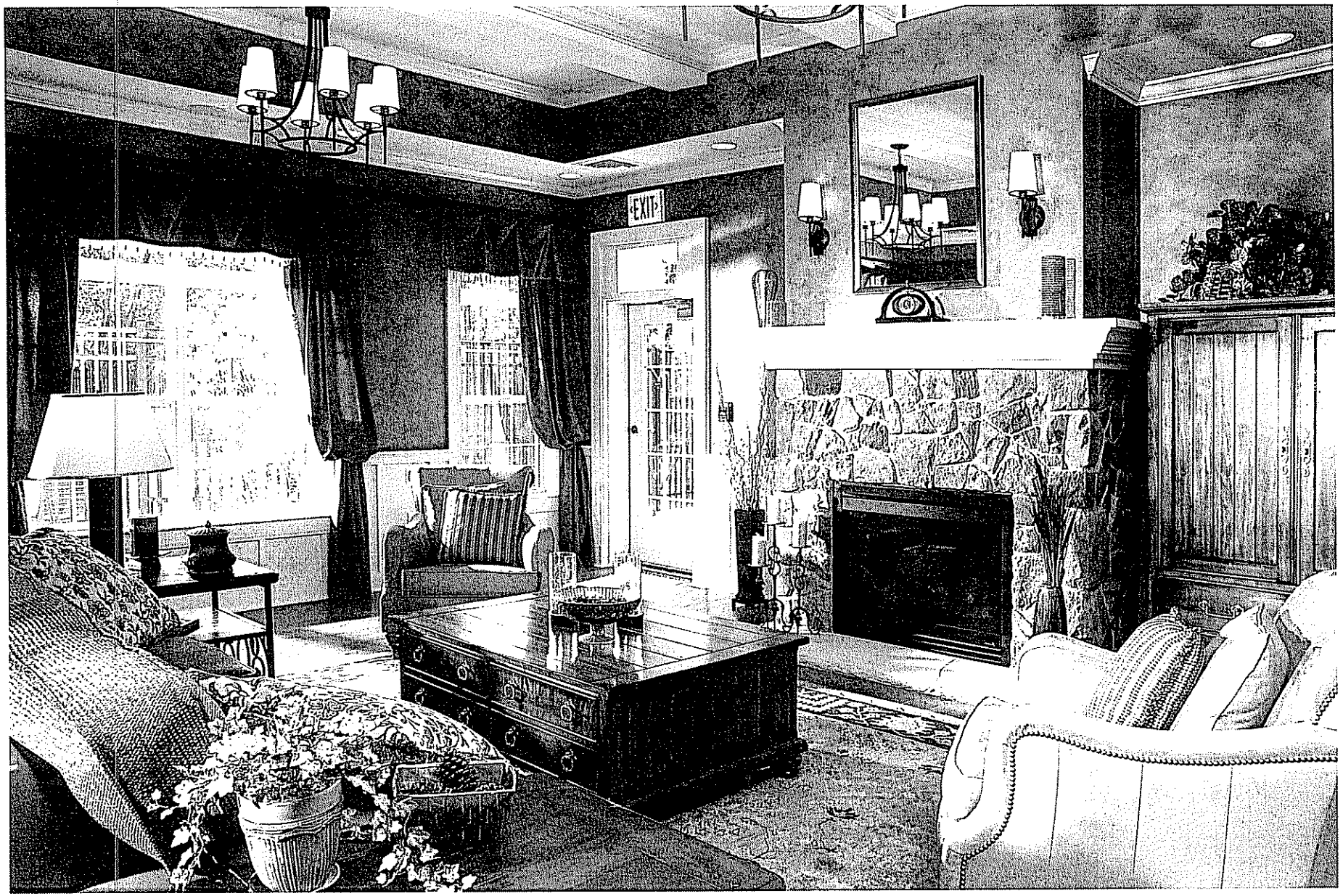
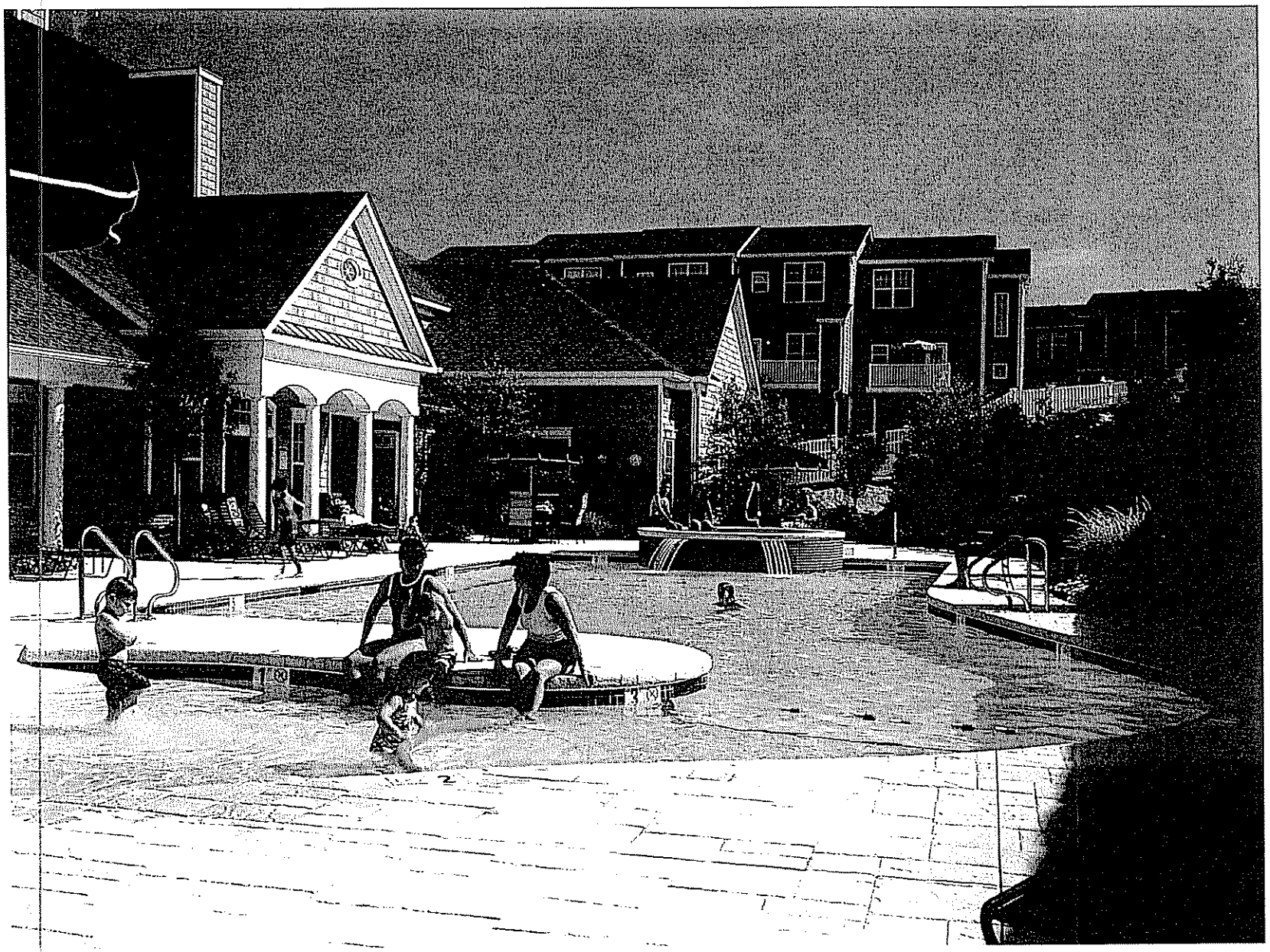
Avalon at Chestnut Hill, Chestnut Hill, MA
Clubhouse



Avalon at Bedford Center, Bedford MA
Clubhouse



Avalon at Stevens Pond, Saugus, MA
Clubhouse

F. Proposed Approach

- *Describe the operation and maintenance (O&M) concept for the components such as stormwater management structures, retention ponds, etc.*

Attached are the Operation and Maintenance concepts for the stormwater management system.

OPERATION & MAINTENANCE OF THE STORMWATER MANAGEMENT SYSTEM:

A. OPERATION & MAINTENANCE OF DETENTION BASINS:
Once the construction site has been fully stabilized, the regular maintenance will consist of the following:

1. Detention Basin (General):
Inspect the basin once each year during heavy rainfall events to determine if the detention basins are meeting the targeted volume and detention time. During a measured rainfall event, mark the high water mark and date on the outlet structure with a permanent black marker or paint. Maintain records showing the amount and duration of rainfall, depth of the basin, and time the basin emptied after the rainfall had subsided.

2. Side Slopes:
Inspect the side slopes once each year for signs of seepage, missing vegetation, and rills. Rills will be replaced with soil & topsoil, compacted, re-seeded and stabilized with straw mulch. Straw bales should be staked at the top of the rills to direct water away from rills. Areas where vegetation is sparse or missing will be re-seeded and mulched with straw mulch. An Engineer will check the source of seepage and determine a course of remedial action. If necessary, mow the interior of the basin including side slopes and spillway. Remove trash on a regular basis.

3. Inlet and Outlet pipes:
Inspect the ends of the pipes at least once each year for signs of loose rocks, sedimentation or erosion around the pipe ends that are protected with rip-rap. Loose rocks will be repositioned or replaced by hand. Silt will be removed by non-mechanical means, such as hand shovel and wheelbarrow. Topsoil and seed should be placed before mulch. Erosion will be corrected by placing additional rocks, straw mulch, or other appropriate treatment. Look for erosion or seepage at the outlet end of the pipes. An Engineer will check the source of seepage and determine a course of remedial action. Erosion should be corrected as discussed above.

4. Low Flow Channel:
Inspect twice each year for moved rocks, excessive weed growth or sedimentation. Displaced rocks will be replaced by hand. Excessive weeds will be treated with Roundup^{tm} or equivalent low-toxicity herbicide. Small amounts of sediment will be removed by hand shovel and wheelbarrow and excessive amounts will require backhoe assistance.

5. Emergency Overflow Spillway:
Inspect at least twice each year for displaced rocks, seepage, and sedimentation. Loose or displaced rocks will be replaced by hand and additional rocks will be added if necessary. An Engineer will check the source of seepage and determine a course of remedial action. Sedimentation will be removed by non-mechanical means, such as hand shovel and wheelbarrow. Mow the spillway at least twice each year. Remove accumulated trash on a regular basis.

6. Sediment Removal:
We estimate the frequency of cleaning to be twice per year for the first two years and annually thereafter. As the ground coverage on the site matures, less sedimentation is expected. The first two growing seasons should provide enough time for the land in the detention basins' contributory areas to be stabilized. Accumulated silt must be removed at least once every ten years.

B. OPERATION & MAINTENANCE OF DRAINAGE STRUCTURES:
After the construction site has been fully stabilized, and the system has been turned over to the owner, the regular maintenance of catchbasins, stormwater treatment devices, and detention basin outlet structure sumps, will consist of the following:

1. Catchbasin water tightness shall be tested and assured after installation. No weep holes will be allowed, and tight joints shall be sealed to the satisfaction of the designated Inspector. Catchbasin and Stormwater Treatment units: If excessive oil, gasoline, or sediment is present, remove all liquid and solids from the sumps. Dispose of waste properly.

2. Catchbasin grates shall be inspected on a monthly basis, and remove debris, sand, and accumulated trash from inlets.

3. Catchbasins and Stormwater Treatment units shall be inspected on a monthly basis, and will be cleaned upon the observance of spill of observable petroleum products, such as oil, coolant, or fuel

4. If a spill of any harmful substance occurs on the paved surfaces of the site, the catchbasin(s) shall be protected against contamination by the use of a dike or absorbent material. Adequate quantities of absorbent material shall be stored in a location accessible to the loading areas.

5. In any case catchbasins and Stormwater Treatment units shall be cleaned of sand and liquid at least twice per year.

6. Catchbasin traps shall be inspected after each cleaning, and any damage shall be repaired.

7. Calcium Chloride usage in winter months shall be limited to the amount of $CaCl$ necessary to prevent sand from freezing. Sand shall be used sparingly but in sufficient quantity to maintain the parking and loading surface in a safe condition.