

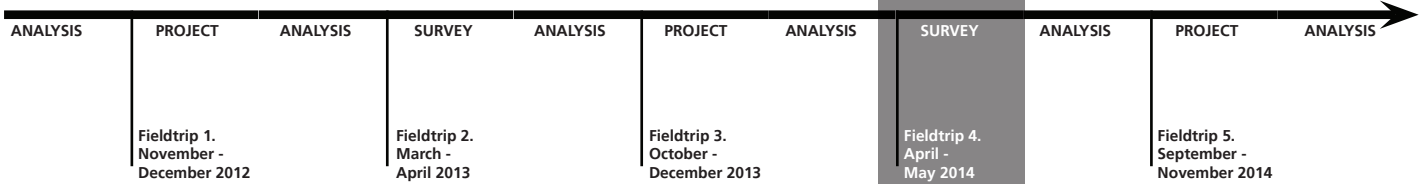
*WELL
RESTORATION*



STORYTELLING



*BUKSH
MUSEUM*



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KEY

Red text

= indicates changes made to the research intentions after the previous fieldtrip

~~Strikethrough text~~

= indicates items completed during previous fieldtrip (most objectives are never considered 'complete' and can always be improved upon. However, a few are not considered worth repeating / refining and this is indicated by the strikethrough text).

Intentions for Fieldtrip 4

These intentions were modified during each field trip: refer to the front of each field trip diary to see the progression of ideas.

Question 1. What are the relationships between architectural remains and culture at the scale of building, neighbourhood, Tajganj? (consider construction, maintenance, use over time and cyclical time, symbolic value, archive of understanding).

1a. How does this build up depth in the urban order?

Intention formed from desktop study and reflection on previous fieldwork:

Through conducting collaborative surveys and

interviews and making exercises (Taking time, building up slowly, building trust, starting with many informal on the spot conversations) (with core interest group - mainly guides, concentrating on the two identified chowk sites in the study area). Need live participatory (explain) project to open up opportunities for participation of different groups, counteract the bias of interview and mapping:

1. Record the ways that the existence of a listed 'monument' affects its surrounding area.
2. Record the ways that the existence of an unlisted 'monument' affects its surrounding area.

3. Investigate how and why specific buildings have been repaired and modified over time - record ownership + role of owner.

4. Find out which local buildings are important to residents.

5. Engage in conversations about the history of the area generally, how people imagine that history and in what ways it is important (progress, renewal or fate?)

6. Engage in conversations about Mughal and Colonial times - do these feature in current identity stories?

7. Record the decision making structures that come into play when focussing on different places -

institutions of commitment.

8. Look at institutional horizons (conditions for living collectively) as a way of thinking about community. Explore relationship (various exchanges) with rest of city **based on new comparisons between bazaar street, highway - Tajganj as a whole.**

9. Branch out further into new groups of people (more thoroughness)/ discover new institutions of commitment such as the mosque committee that look after places and explore this in relation to 'heritage value'.

10. Look more at bazaar street as the place where

10. Look more at bazaar street as the place where exchange between villages happens - a unique spatial institution.

Produce:

1. Conservation "vocabulary" - set of available materials and techniques in area come at this sideways, more openly how and why do people make particular things out of particular materials?

2. Maps of Tajganj at different scales, picking out 'historic' fragments of importance.

3. Building studies (plan, section) of listed and unlisted buildings relating to community activity

4. Map out institutions of commitment to place, like the mosque committee.

5. Map out spatial institutions - road, highway, chowk etc.

6. Through desktop research/survey:

Look at urban condition of the whole of Tajganj in relation to city.

~~Through desktop survey and looking at records from this trip:~~

~~1. Create historic timeline of Tajganj and Agra
Explore the concept of 'community'~~

2. Research 'indian village' in relation to mughal city

Research history of construction materials being used in Tajganj

Question 2. Compare ASI, CURE/RAY, local opinions about important culture and the architecture underpinning it, or vice versa.

Intention formed from desktop study and reflection on previous fieldwork:

Through conducting collaborative surveys and interviews and making exercises:

1. Investigate conflicts between the slum-

upgrading programme and Agra's heritage protection programme for Tajganj.

2. Find out important memories and stories of local residents and compare these to what the 'official' heritage protection policies endeavour to protect.

3. Explore maintenance (and history of maintenance) of places, its relationship to civic commitment and political participation (add to building studies).

4. Explore, through active involvement, the process of 'self curation' with residents. How would tourists be guided through the area if residents were totally in charge?

5. Why are fragments relevant NOW to residents and different groups?

Produce:

1. Comparative drawings of instances where architecture has perceived 'heritage' value at area/building scale
2. Guidance repair documents for types of unlisted sites with perceived 'heritage value'.
3. First of all, study a 'type' of place in detail, spend time in it, compare meaning for different residents.

Through desktop research:

Look further into area's history and why it is/could be valued by external 'experts' eg Mughal water technology:

Question 3. What is the local/collective understanding of the conflicts between various interpretations of 'heritage value'?

Intention formed from desktop study and reflection on previous fieldwork:

Through holding activities relating to the topic which engage people with different interests and enthusiasms - provide multiple ways to get involved:

- Build collective involvement/understanding in relation to sites of contention due to conflicting 'heritage' values.
- Hold open ended activities where residents can bring in information they feel is relevant.
- Aim for truthful (less polite) discussion, which will take trust-building first.
- Ask about previous encounters with ASI - what is the opinion of the ways they protect buildings?
- With residents, compare the 'self-curation' activity with other tourism and heritage plans for Tajganj.

Produce:

Records of event: both material outcome of making and interviews/discussions with participants.

Transect Walks: Actions

Interview:

Carried out many times in a CLOSED format (just two questions) with a variety of groups (you might say estimated 'cross-section') based upon typical categories: profession, religion, family, gender, age, location, wealth.

Two questions were asked:

1. What do you consider to be valuable cultural heritage in your neighbourhood?
2. Can you draw a line around the edge of your neighbourhood? – The aim was to clarify whether the identity of different neighbourhoods had a relationship to fragments/ topography etc and what the relationship was between neighbourhood identity and commitment to place.

Walks:

During the interview I would ask if anyone in that group would take me to look at the fragments identified, or whether they could nominate someone who would guide me. Usually this led to a snowball effect of people joining the tour during the day, as well as people coming out to join it at particular sites to add information. I would then bring out a clean map for these new participants to join in the closed interview. I always made sure that everyone who joined the walk was asked for their input.



Interviews with residents before transect walks.

Transect Walks: Resistance and Accommodation

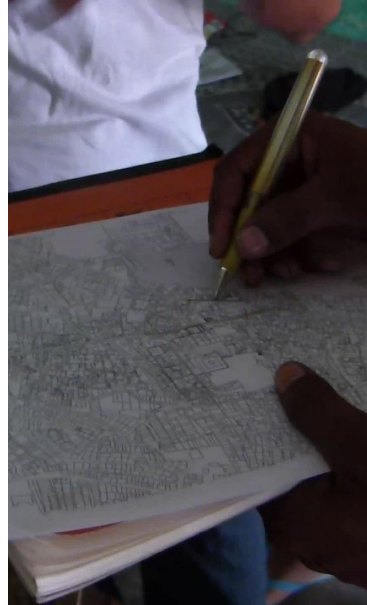
You can never really get a representative cross section of residents. However, the attempt at creating a 'check list' of groups of people, built up out of understanding of the place so far (the only way to second guess which groups might be left out) was useful because it made me keep thinking about that issue, and seeking out opinions from those that would not come forward.

The two methods of interview and walking worked well together, as a process of readjustment and tailoring. The information given from memory, and the information given at points of 'rediscovery' on the walk showed up how some fragments are known to people - supported by memory - and conversely, others are unknown, and

when encountered, are a support to memories - they bring back stories to people. The exercise also showed that interview alone is not an adequate source of information regarding the relationship between people and places - you have to go to the place with those people (not everything is held in imagination).

An advantage of the closed interview was that data could be collected together into some useful comparisons, and many groups of people could be reached at the same level for widespread data collection.

Two kinds of relationship with fragments were found during the mapping process: celebrated



Transect walk and mapping in Sikawar basti.

and peripheral fragments. Celebrated fragments, as expected, usually had committees/ institutions of commitment. However, a lot of the things marked on maps were vague, and the group went searching for them in the walks. This often led to 'forgotten' artefacts that were rediscovered which supported culture in a different way and had often been adapted rather than restored in a way the ASI definitely wouldn't approve. But the topic remained in some way.

Without making anything, the obstacles embedded in habit, in the only known ways of getting things done, in material itself are not exposed - so meaning is partially exposed but urban topography is not entirely exposed, as

opposed to the previous making exercise where putting furniture out created a new sensitivity to spatial institutions, appropriate activities in them etc. A 'transect walk' does not set up that level of negotiation for involvement with the place.

It became obvious that by spending so much time in the place with a core team of participants (guides), their understanding of the topic grew enough to be able to create conversations about this difficult topic with the rest of the participants, and new information was coming out that hadn't come out in response to similar questions asked at the beginning of the research period.



Objects made by residents in the past were rediscovered during the process.

Transect Walks: Reflections on Method

Selection from plan plus snowballing technique
check and balance each other

Theme: Role of objects in building understanding
- people rediscover info in the presence of objects

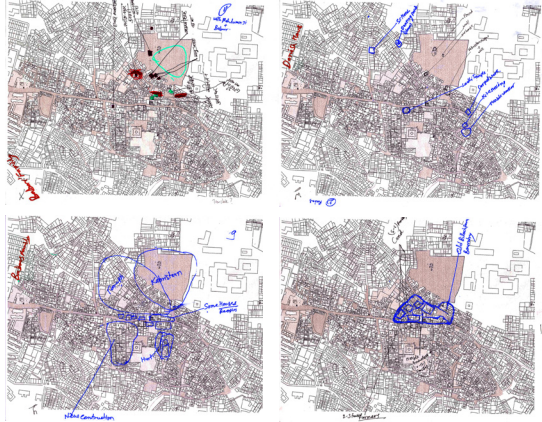
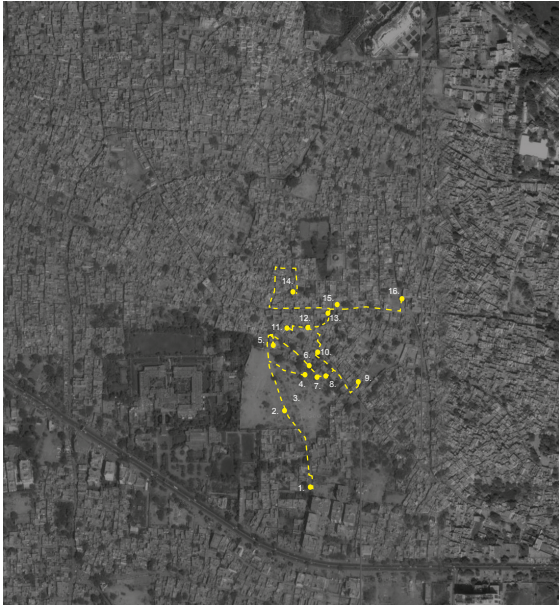
Theme: Active Involvement
Need a making exercise to explore the matter in
more depth

Theme: Role of objects in building understanding

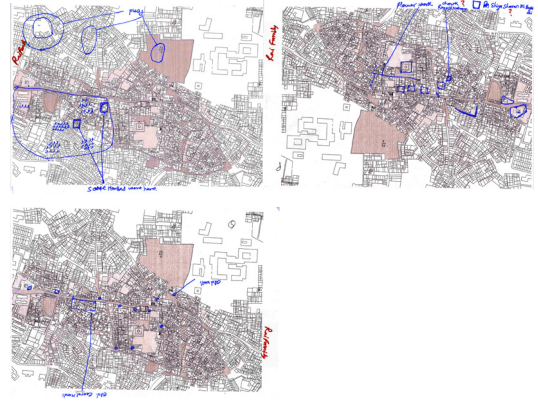
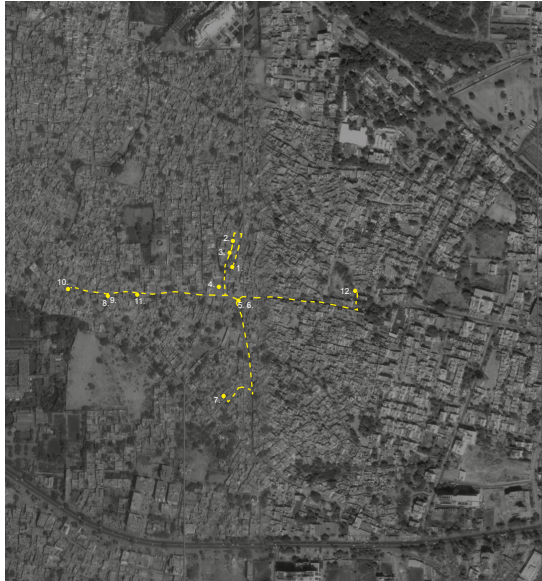
Theme: Broaching complex subject matter
Guide group mediating between the concepts and
participant knowledge



A conversation with residents during a transect walk: these conversations drew in new participants.



Maps used to create Transect Walk 1



Maps used to create Transect Walk 2

Furniture Making Exercise (Extended): Actions

As the interviews continued, and we began to reach into new groups of residents, a group of skilled labourers living in Sikawar Basti decided to take up the challenge of making signage and furniture, believing their skills to be superior (they work on tiling and laying stone and marble at the Taj Mahal and in hotel work, under the guidance of highly skilled Raj Mistry but are not themselves Raj Mistry – so it could be said they are considered a middle rung of mason in this area).

They decided to use the skill they have been developing and changing over centuries (which in its newest form is a mixture of coloured concrete and marble chip terrazzo, as well as tiling designs with larger pieces of coloured marble) to create furniture.



Making plaques and tiles in Sikawar basti.

Furniture Making Exercise (Extended): Resistance and Accommodation

This group took much longer to reach and include in the collaborative research - this is why iteration is important. On the first attempt, some groups might not be interested, but after seeing the outcome, wish they had become involved.



Making plaques and tiles in Sikawar basti.

Furniture Making Exercise (Extended): Reflections on Method

The structure of field trips gave people time to talk about the project and gather new participants, so more people wanted to get involved the next time.

Theme: Thoroughness / inclusion



Making plaques and tiles in Sikawar basti.

Planning Application: Actions, Resistance and Accommodation

Actions

Meeting with ASI to discuss planning application.

Buksh House planning application to ASI (Form 1) completed and submitted by Buksh family.

Resistance and Accommodation

It becomes apparent that the planning application is a lengthy and complicated process. The ASI send representatives from Agra Development Authority to look at the building, in the hope that they will put money towards a renovation. However, the ADA's intention seems to be a glossy, costly rebuild - there is no understanding that the inability of

others to replicate such a project limits everybody, and will put significant constraints upon the lives of the families in the houses (I have already seen that contracts regarding maintenance can involve invisible power transfers). The 'expert engineer' - in a grand and sweeping benevolent gesture - on visiting the house tells the owners that it will be completely renovated with ADA money. Shortly after this moment, general elections are held, the ADA is reshuffled and nothing more comes of this except that the residents' hopes have been raised. It is apparent that city level organisations and planning authorities do not have much understanding of or respect for the Tajganj area.



Representatives from the ADA and an architect come to view the house.

Discoveries about Urban Order

There were many overlapping and different ideas about which parts of the study area had 'heritage value'.

Fragments acted as celebrated and peripheral supports to valued culture. Celebrated fragments supported institutions of commitment with a greater role in local decision making - these institutions were usually located on the bazaar street. Their relevance relied upon a recognised meaningful topic.

Peripheral fragments' relevance was due to aiding something meaningful. They often built up a recognised urban institution through recognised architectural language and THIS BUILT UP DEPTH.

Maintenance responsibility had been given over to external organisations in certain sites. This had resulted in an invisible power shift and breaking down of local institutions of involvement with place and their resultant associational level of politics which can link up local and city scale governance.

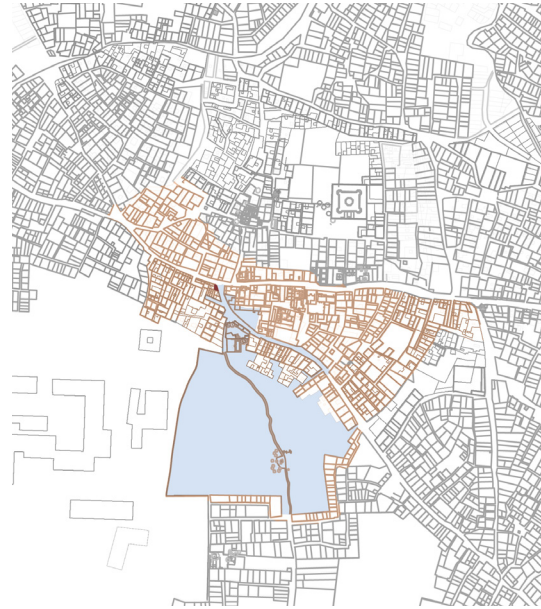
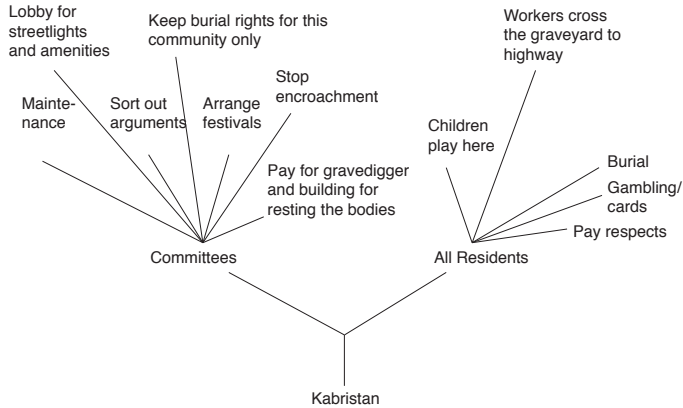


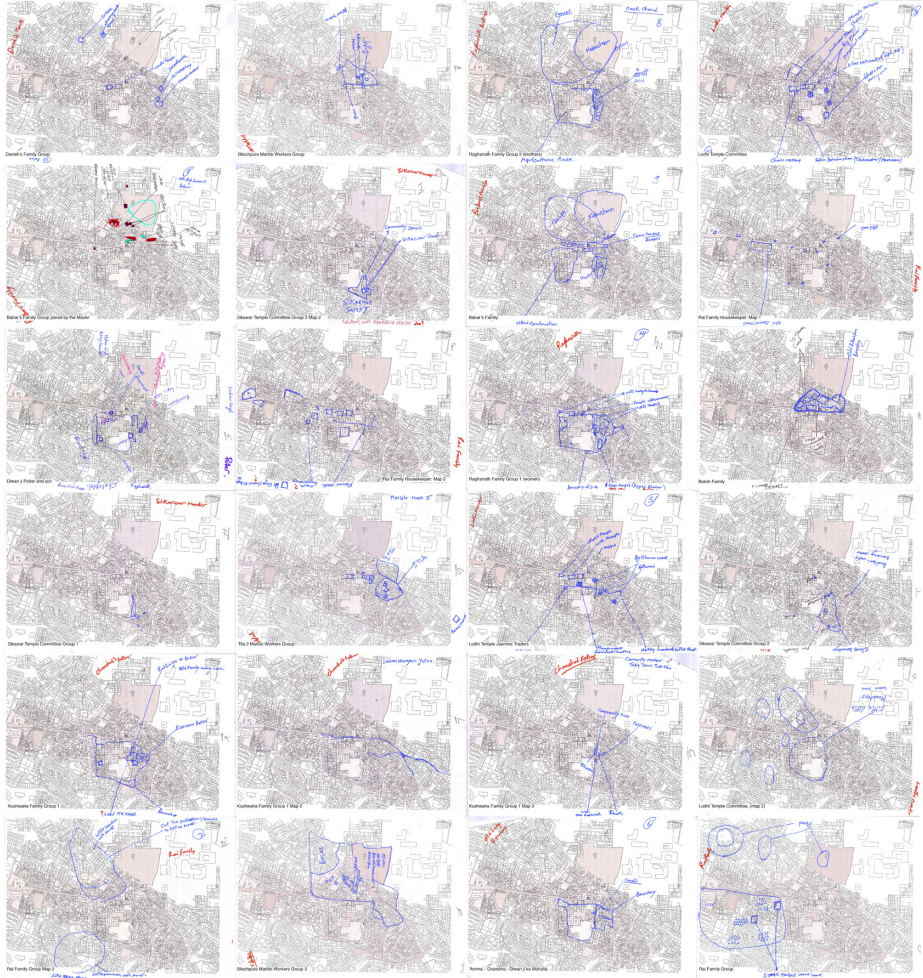
Saint's grave, Diwanji ka Mohalla

Area where committee constituents reside

Committee meeting point

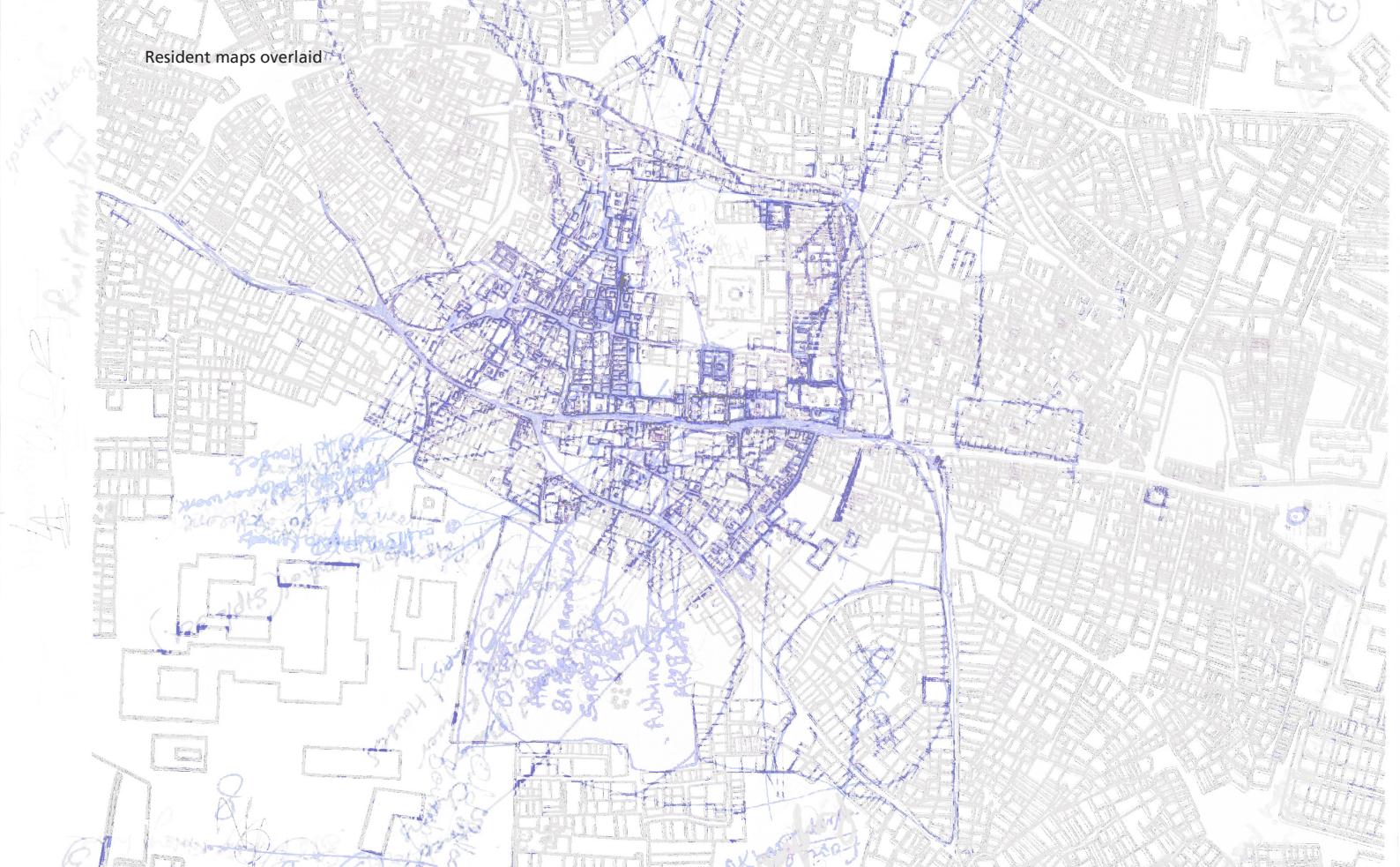
Area maintained by committee





Maps made by residents during transect walk exercise

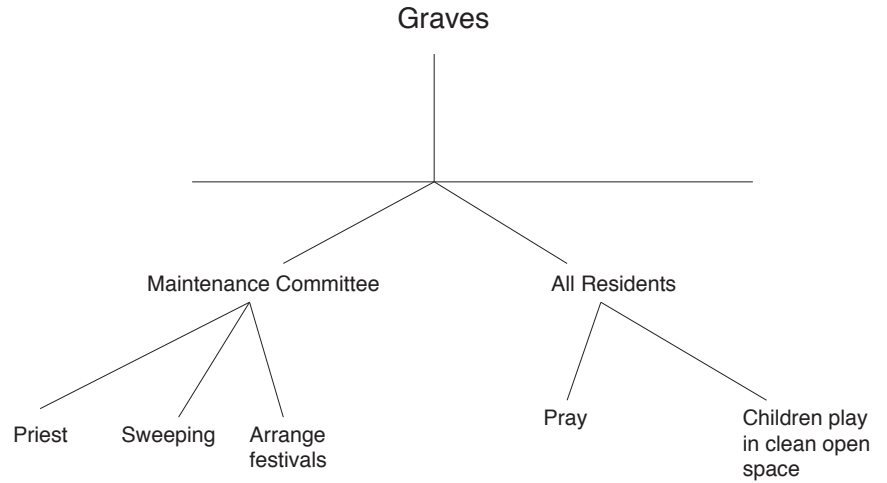
Resident maps overlaid



Type 1: Celebrated Fragments



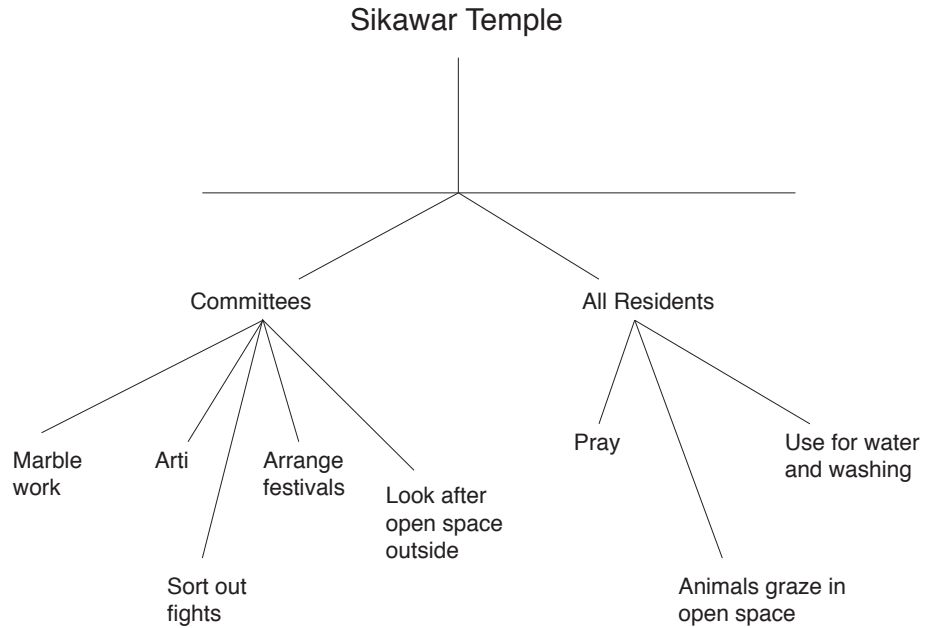
Saints' Graves (relevant since day 1)



Type 1: Celebrated Fragments



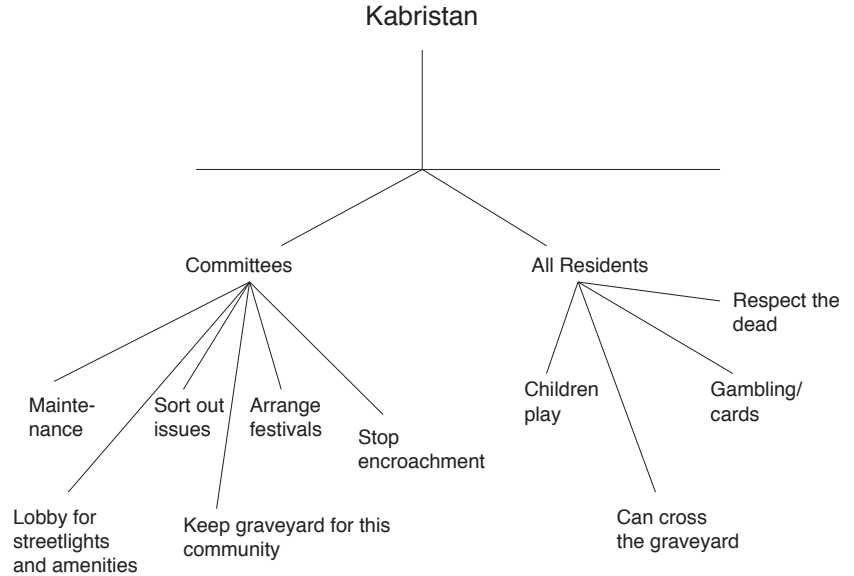
Sikawar Temple (relevant since day 1)



Type 1: Celebrated Fragments



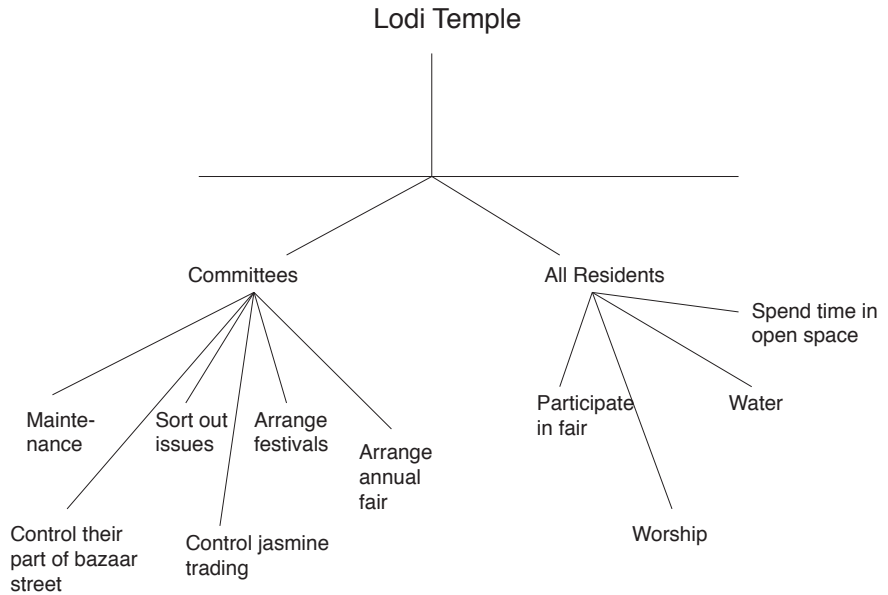
Kabristan (regained relevance when threatened)



Type 1: Celebrated Fragments



Lodi Temple (reinvented as relevant by a new group)





Craft Display



Creative Challenge



Structured Interview



PARTICIPANTS
HOST

QUESTIONER
HOSTS



Observing
existing interests



Applying existing skills



Developing skills



Transect walk (themed)



Questionnaire



Observing
traditional skills



Storytelling Exhibitions



Applying developed skills



Mapping exercise

QUALITATIVE
DATA

COLLABORATIVE
PROJECTS

QUANTITATIVE
DATA

Photographs

Visit to Qutb Minar, New Delhi





Visit to Qutb Minar, New Delhi

Meeting with residents before
transect walks





Saint's grave, Bilochpura

Saint's grave, Bilochpura





Saint's grave, Bilochpura

Saint's grave, (left) and
graveyard (right) Bilochpura





Meetings with residents before transect walks.

Meetings with residents before transect walks.





Meetings with residents before transect walks.

Shrine and temple, Diwanji ka Mohalla





Rooftop view to Tomb of Diwani Begum, Diwanji ka Mohalla

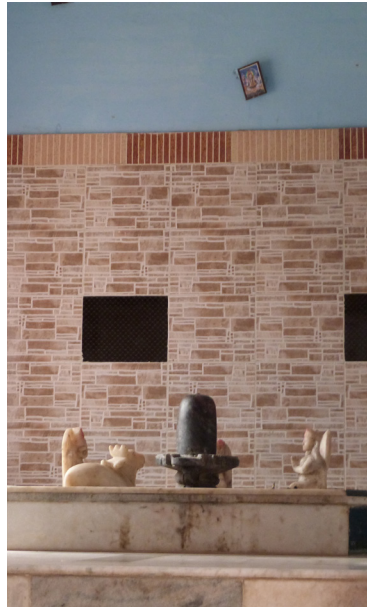
Looking towards a street in
Diwanji ka Mohalla from saint's
grave





Sikwar temple

Sikawar temple





Small industrial units in Diwanji ka Mohalla: test-tube manufacture (left) and pottery (right).

Small industrial units in Diwanji
ka Mohalla: chain making.





Testing lime plaster (left) for furniture making workshops, and (right) women in Diwan ji ka Mohalla demonstrate their cooking skills.

Marble inlay work, Bilochpura





Marble inlay work, Bilochpura

Temple in Diwanji ka Mohalla (left) and temple at the bank of the Yamuna (right).







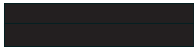
Tile making in Sikawar basti (left) and an example of marble inlay work for interior decoration in Sikawar basti (right).

Appendix 01:
ASI Planning Application

Form I

Application for grant of permission for undertaking repair/renovation in the prohibited area and construction/repair/renovation in the regulated area of protected monument or archaeological sites & remains declared as of national importance under the Ancient Monuments and Archaeological Sites and Remains Act, 1958

(See rule 6)

1. Name of the applicant : 
2. Address of the applicant : 
 (a) Present
- (b) Permanent N/A
3. Name of the owner (s) :
 (if the applicant is other than the owner)
4. Address of the owner(s):
 (a) Present address
- (b) Permanent address As above
5. Whether the property is owned by the individual or jointly (furnish documents) Owned by applicants
6. Whether the property is owned by Government/Public Sector Undertaking/Private Sector Undertaking Firm (if so, details to be furnished with complete address and phone numbers) N/A
7. Locality of the proposed construction (with full details plot number, etc.) 
 68

8. Name of the nearest monument or site: Raufa Diwanji Begum and Mosque
 (a) Locality : Diwanji ka Mohalla, Tajganj
 (b) Taluk : Sadar
 (c) District : Agra
 (d) State : Uttar Pradesh
 (enclose area map showing the monument and the site of repair/ renovation/construction)
9. Distance of the site of construction related activities from the protected boundary of the monument: 15 metres
 (a) Distance from the main monument:
 (b) Distance from the protected boundary wall of the monument: N/A
10. Nature of the work proposed : REPAIR
 (repair/renovation/construction/reconstruction, etc.)
11. Details of work proposed (Furnish complete details with drawing of building/structure) Existing: 2.5 storeys. No additional storeys proposed
- i) Number of storeys
- ii) Floor area (Storey-wise) Existing Floor Area: Lower storey: 90 sqm; Upper storey: 180 sqm
 No additional floor area proposed
- iii) Height (excluding mummy, parapet, water-storage tank, etc.) Existing height: 8m. No additional height proposed
- iv) Height (including, mummy, parapet, water-storage, tank, etc.) As above: 8m
- v) Basement, if any proposed with details No full basement. Lower storey area included in ii) No additional basement proposed.
- (Enclose plan, section and elevation drawings of the existing building duly approved by the Building Plan Sanctioning Authority and proposed building plan with section and elevation in case of reconstruction. Enclose building plan, section and elevation of the proposed building in case of construction/reconstruction).
12. Purpose of the proposed work : Residential
 (residential/commercial/institutional/public/community)
13. Approximate date of the commencement: of the proposed work 01 June 2014
14. Approximate duration for completion of the proposed work: 31 May 2015
15. Maximum height of the existing modern buildings in the close vicinity of:
 a) near the monument : 3 storey, 12m
 b) near the site of construction related activity : 3 storey, 12m

- | | |
|--|---|
| 16. Whether for monument is located within the limits of Municipal Corporation/municipalities/Nagar Panchayat/Village Panchayat | Agra Municipal Corporation |
| 17. Does any Master Plan/zonal development plan/layout plan approved by concerned local authorities exists for the city/town/village : | Agra 2001-2021 Development Plan,
Agra Development Authority |
| 18. Status of modern constructions in the vicinity of the monument and the proposed site of construction/reconstruction : | Near to the monument there are many residential buildings constructed in the 1980s. Around the proposed site is a mixture of new and old (circa 1900-2014) residential buildings with some small shops on the bazaar street. |
| 19. Open space/park/green area close to the protected monument/protected area: | There is some open space in front of the tomb which is not visible from the site of construction. The masjid has a small open space paved by ASI on the opposite side (north side) to the site of construction. |
| 20. Whether any road(s) exists between the monument and the site of construction: | Yes - see site map |
| 21. Remarks/additional information, if any: | Without repair this building is unsafe to live in but also a danger to passers-by. There are many passers-by, including children, because of the close location of two popular mosques. Work needs to start as soon as possible because in the next monsoon the building will become even more dangerous. |

I.....declare that the above information is correct. I also undertake to observe the provisions of the Ancient Monuments and Archaeological Sites and remains Act, 1958 as amended by the, the Ancient Monuments and Archaeological Sites and remains (Amendment and Validation) Act,2010 and the rules made there under.

Place:

Seal of firm (if any)

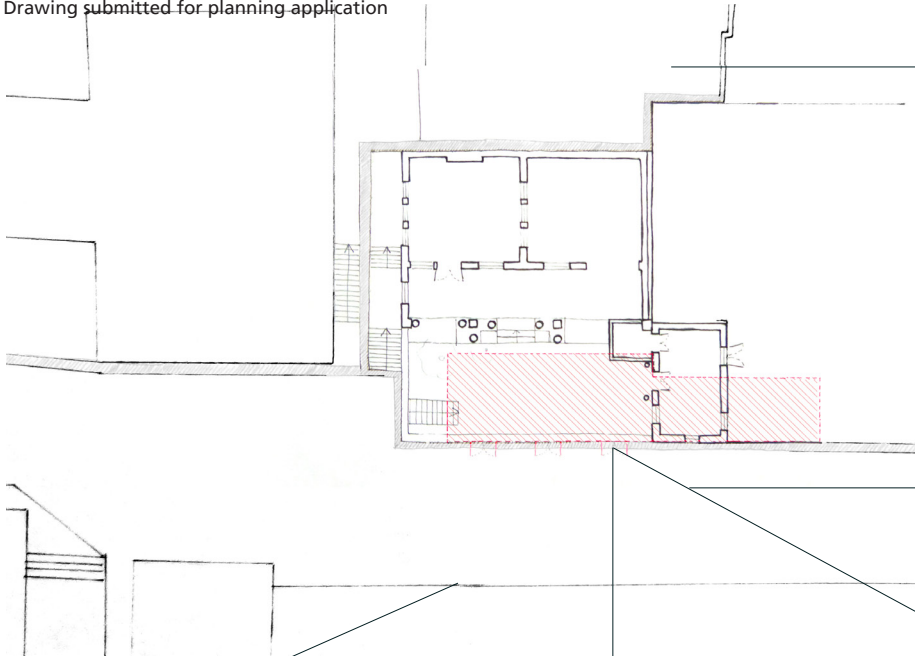
Date:

Signature of the applicant

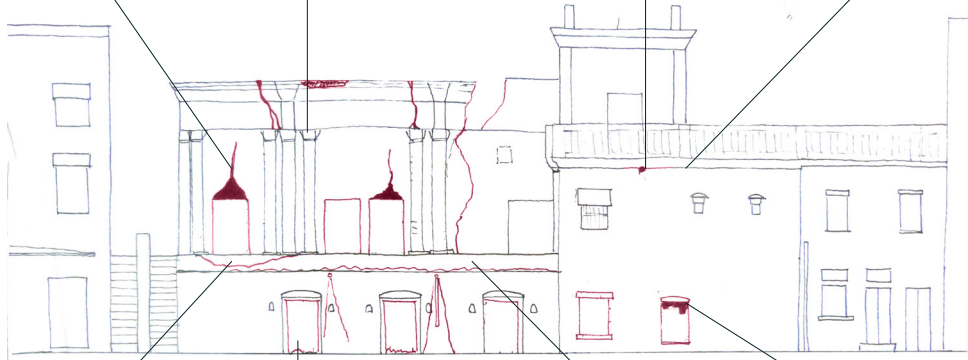
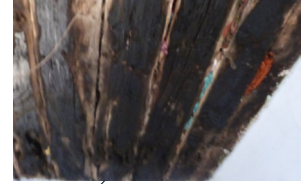
Note:

- 1- If any application is on the behalf of the organization/firm, the signature should be of the head of that organization/firm.
- 2- Enclose photographs showing the monument and the existing modern constructions.
- 3- Google Earth Images of the area under reference showing the monument and the site of construction related activities.
- 4- Enclose ownership documents duly attested by an authorized officer of the Government.
- 5- In case of repairs/renovation a report from a duly authorized/licenced architect to be submitted by the applicant.

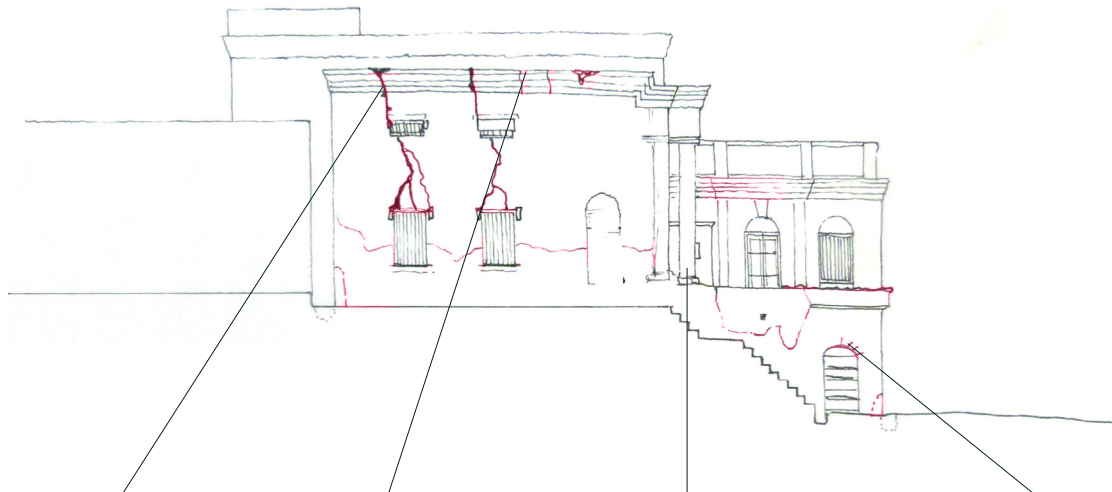
Drawing submitted for planning application



Drawing submitted for planning application



Drawing submitted for planning application



Appendix 02:
House Repair Proposal

House with Nine Pillars

Details for Repairing Basement and Terrace

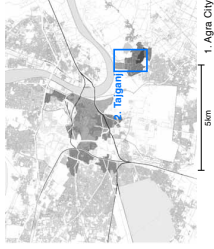
Bilochpura, Tajganj, Agra, 2014



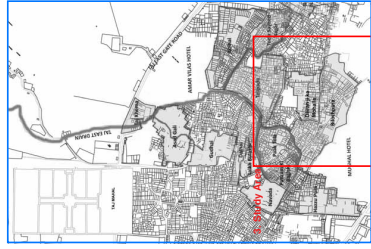
First Steps

1. Engineer's advice is needed for the following before work can proceed (unless he determines):
 - a) Will there be problems with damp seepage from the retaining wall at the back (south edge) of the lower level?
 - b) Is it cheaper to raise the upper level structure or demolish it?
 - c) What effects will demolition of the upper structure have on the street level room? How can they be made safe if the demolition happens?
 - d) How can the lower level structure be made safe if it is to be retained on a borrowed structure? If they are taken out suddenly will the cause cracks in the lower structure?
 - e) Level of corrosion of the masonry supporting brick arch ceiling walls underneath these surface slabs (if windows to have concrete and brick above can be sealed on a borrowed structure) or the concrete and brick above can be sealed on a borrowed structure?
 - f) Condition of bricks in the wall below road surface level: if they have been damp for many years will they be too soft to support the new road? If they are too soft, the road construction needs to be given to the fact that the new road will likely apply loads from one side and this should be balanced by the slab on the other side.
- Note: Lower level will temporarily need to have one opening unblocked/unbraced in order for engineer to get access to the lower level rooms.

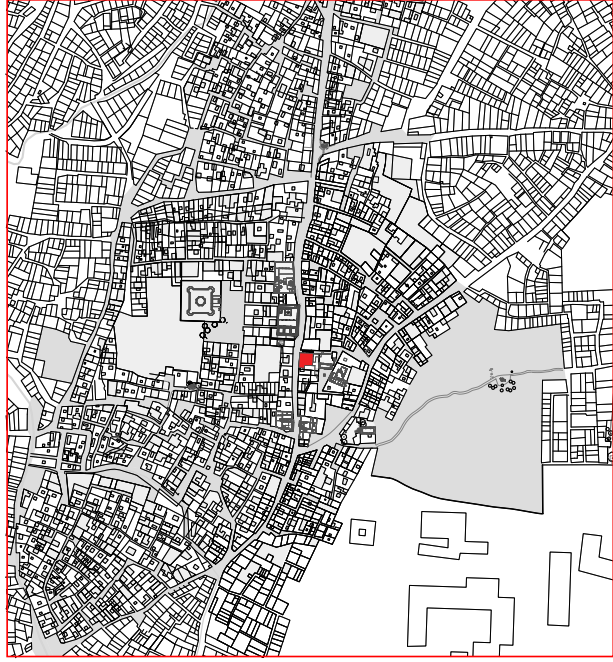
House Location



1. Agra City

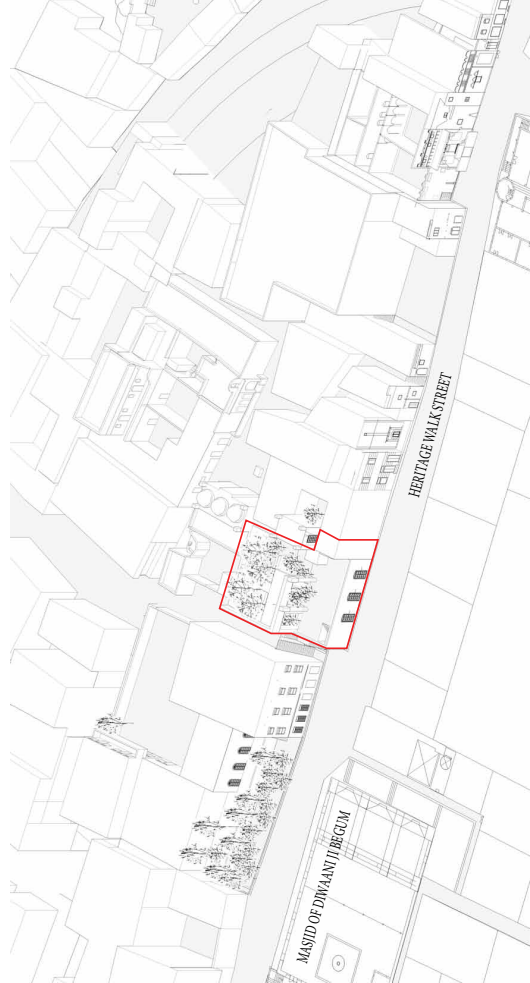


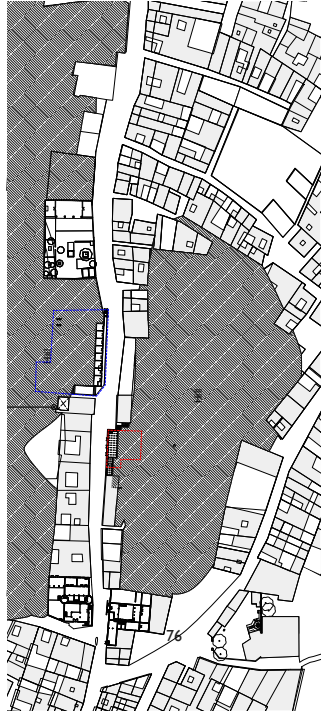
2. Target



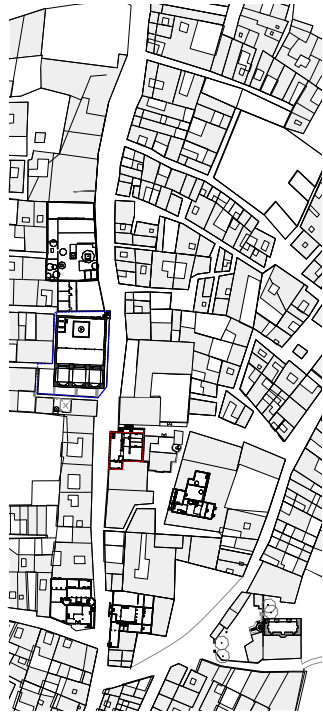
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3. Study Area

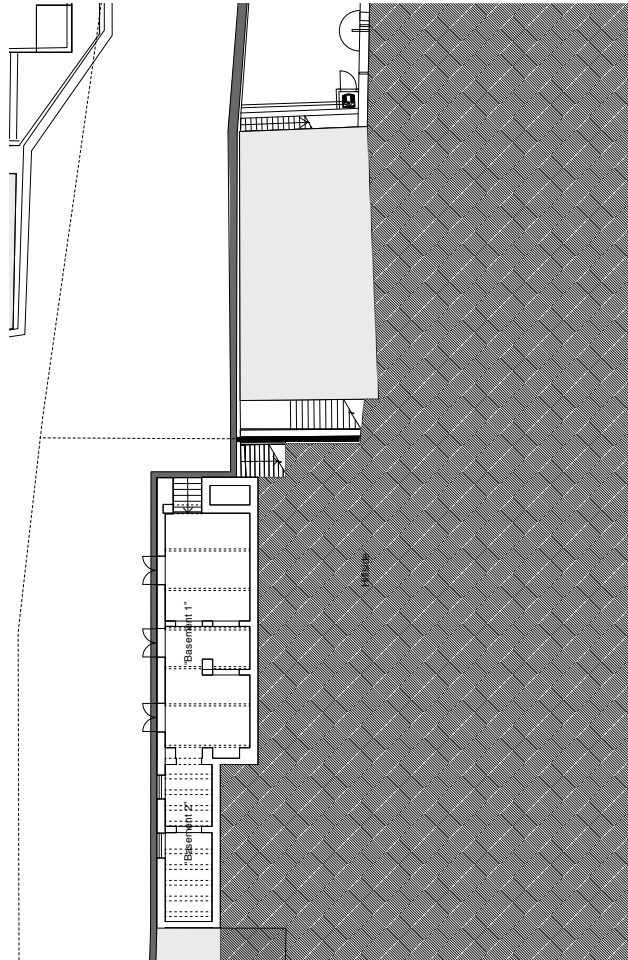




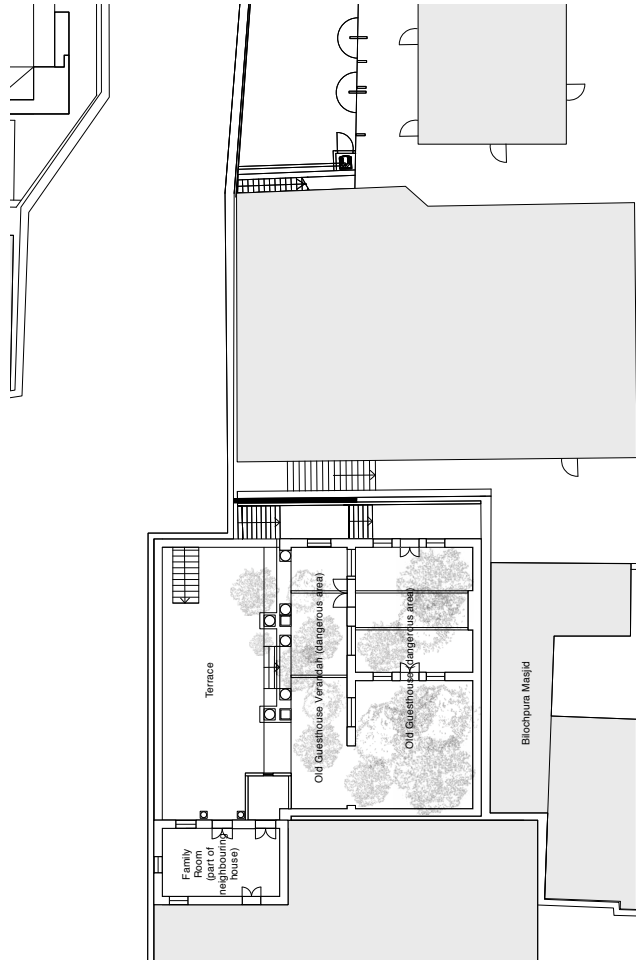
○ Listed Masjid
 □ House Location
 Street Level Plan 1:1250



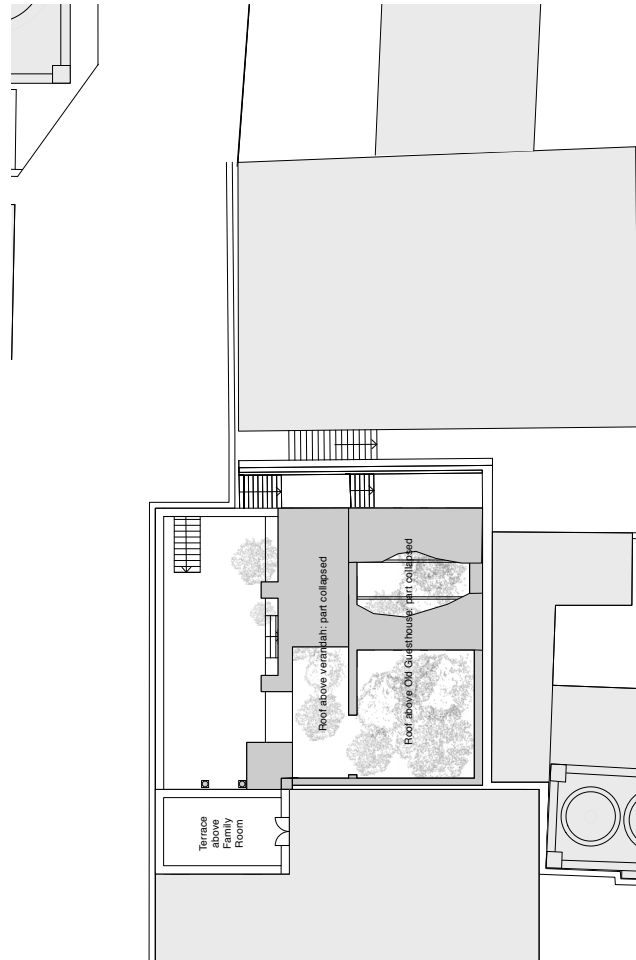
○ Listed Masjid
 □ House Location
 01 Level Plan 1:1250



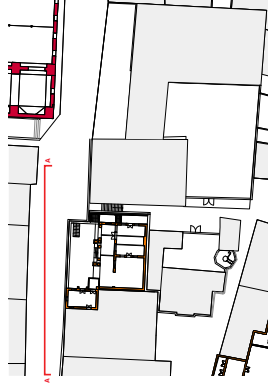
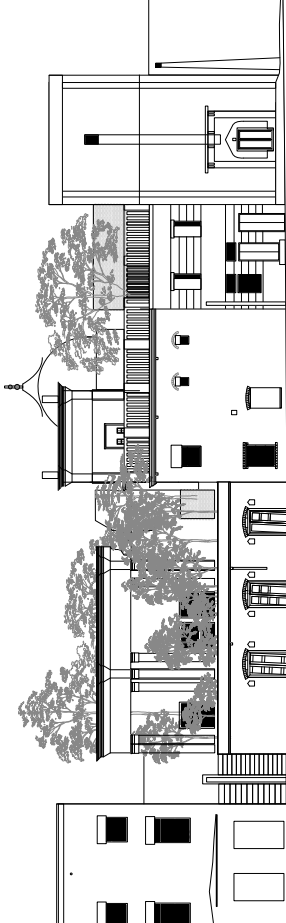
○ Street Level Plan 1:100



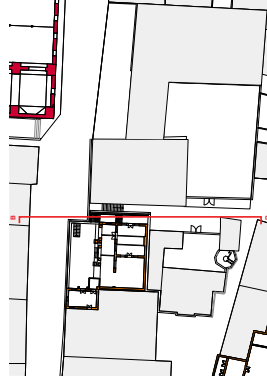
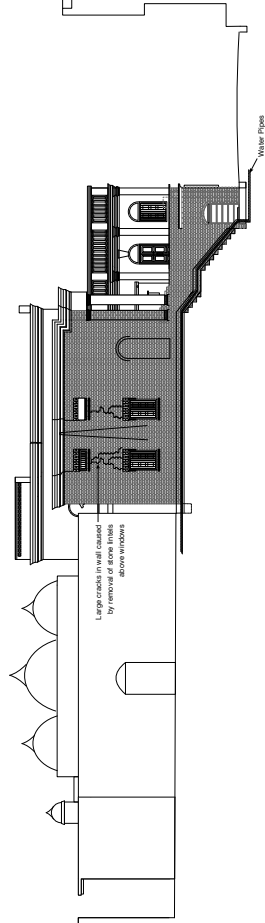
① 01 Level Plan 1:100



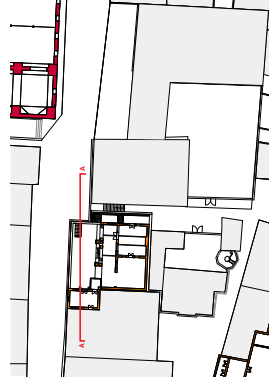
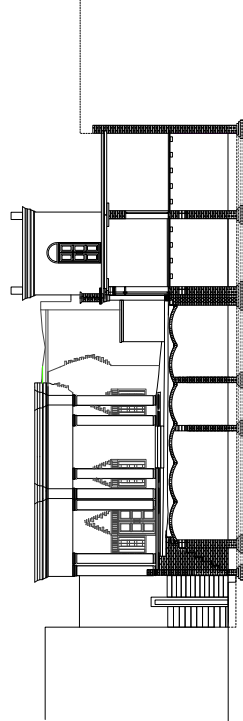
② Roof Level Plan 1:100

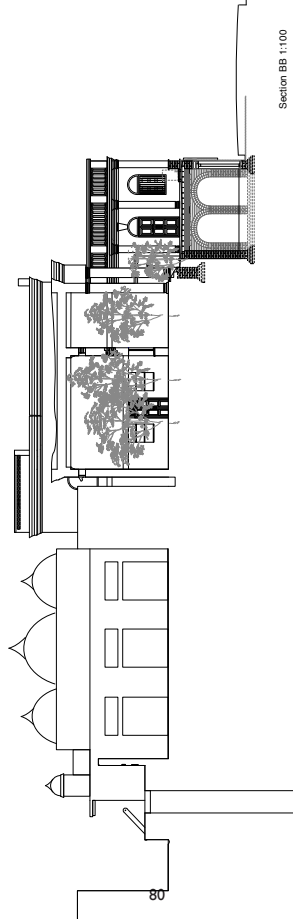


Elevation AA 'Street Front Elevation' 1:100

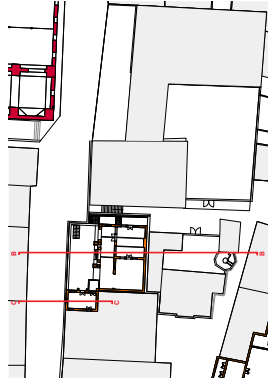


Elevation BB 1:100

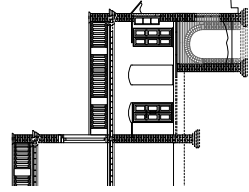




Section BB 1:100



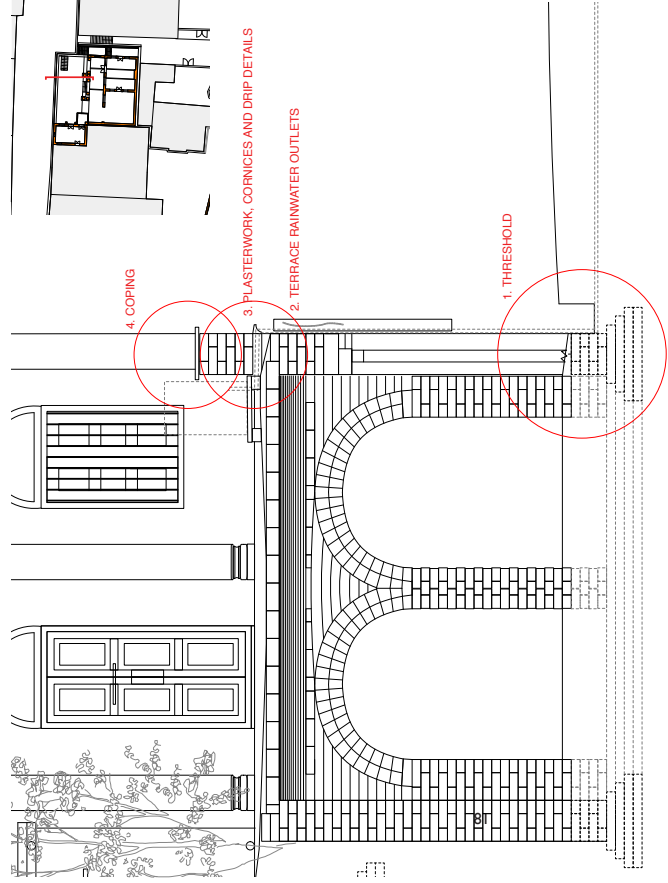
Section CC 1:100



Terrace above Basement Room 1, showing ruined OIG Guesthouse building behind.



Basement Room 1 Facing northwest



Problems

1. THRESHOLD

- Road level has risen and is now above interior floor level of street-level basement rooms
- This makes the doorways short, approximately 1900mm (although exact interior floor level unknown due to a build-up of silt and rubble)
- Storm drain has been created between the road and the basement walls of the houses. This causes water to flow into the basement rooms. On top of this, high levels of drainage in the drain make the basement rooms unhealthy and smell bad
- Unknown at present whether bricks against drain have any remaining structural integrity
- The concrete floor is cracked and crumbling
- Any flooding of the storm drain means that the basement rooms flood, filled with polluted drain water
- When the moisture was built, the road was compacted earth, which allowed evaporation of moisture - where the foundation walls got damp, they condense our again. Now the road is covered in waterlogs materials, forcing damp into the foundation walls.

2. TERRACE RAINWATER OUTLETS

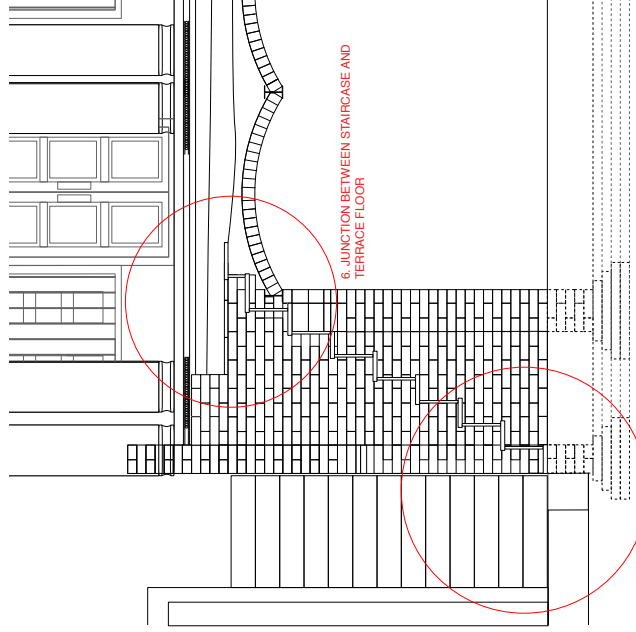
- Rainwater runs off terrace through holes made in ballustrade below the cornice. Some outlets look as though they were made much later than the first construction phase.
- Evidence of rainwater pipes (installed later than the first construction phase) remains but most of them are missing
- Damage to pointing and to floor surface means that a large amount of rainwater runs into the building structure rather than off the building
- The rainwater comes through the outlet but then runs down the facade, leaving damp and mould on the facade underneath

3. PLASTERWORK, CORNICES AND DRIP DETAILS

- Plaster has worn away from the cornice exposing the shaped bricks underneath. This means that rainwater runs down the wall and then soaks into the damaged pointing of these bricks, and into the wall.
- Originally a thick layer of plaster at balls was laid on top of these bricks.

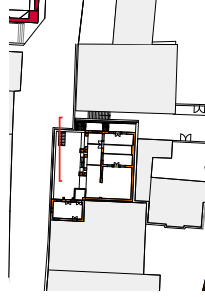
4. COPING

- A layer of tiles has been laid at some point on top of the ballustrade wall. A lack of proper mortar joint or alternatively drip detail in the bottom of the tile means that water runs under the tile and into the wall.
- In some places the tiles have been removed leaving no coping detail at all.



6. JUNCTION BETWEEN STAIRCASE AND TERRACE FLOOR

5. THRESHOLD AT STAIRCASE



Problems

5. THRESHOLD AT STAIRCASE

- The stairs are earth/blocks and mortar joints have worn away allowing cold and rain to come through the steps into Basement Room 1.
- As with the street side threshold:
 - Road level has risen and is now above interior floor level
 - Storm drain has been created between the road and the basement wall of the house. This causes severe damp problems in the walls of the house. On top of this, high levels of siltage in the drain have caused the drain to become blocked.
 - Unknown at present whether bricks against drain have any remaining structural integrity

6. JUNCTION BETWEEN STAIRCASE AND TERRACE FLOOR

- Stairs are steep and irregular. The top stair does not reach up to where the top of a new slab will be
- Coping detail needed around the stair opening
- Slab to be created with lime concrete or mortar and stone under the top stair before a new slab is poured



5. THRESHOLD AT STAIRCASE



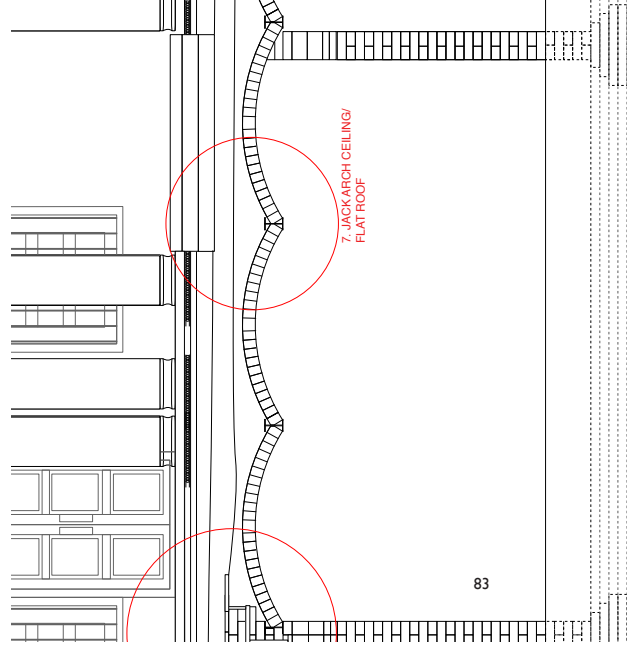
6. JUNCTION BETWEEN STAIRCASE AND TERRACE FLOOR



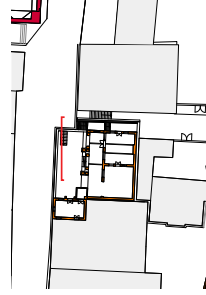
6. JUNCTION BETWEEN STAIRCASE AND TERRACE FLOOR (view underneath)



6. JUNCTION BETWEEN STAIRCASE AND TERRACE FLOOR



7. JACK ARCH CEILING/
FLAT ROOF



Problems

7. JACK ARCH CEILING/FLAT ROOF

- Because the terrace floor finish and slab have worn away (at some spots the bricks of the jack arch actually show through in the floor of the terrace above) and on top of that the concrete has become severely damaged, the roof is no longer watertight. The terrace floor is sandy/veeally - probably because of the lime concrete also used ~~away~~.
- It appears that the original slab is a mix of large aggregate, coarse bricks and lime concrete. The concrete is very porous and perhaps have created some level of heat insulation. The floor just outside and inside the family room appears to be a polished plaster (this needs to be checked). It probably contains some aggregate. This is probably what the rest of the terrace floor was covered with also, corrodect. This may well have been exacerbated by a reaction with lime from the pointing and also above. The detail of the roof is not clear, but the roof structure is unknown without excavation. Air in side the basement rooms would have at times been very moist, causing corrosion too.



7. JACK ARCH CEILING/FLAT ROOF
(view above)



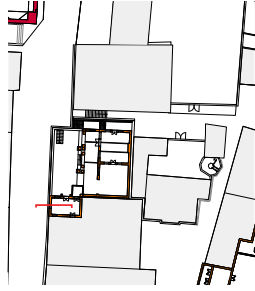
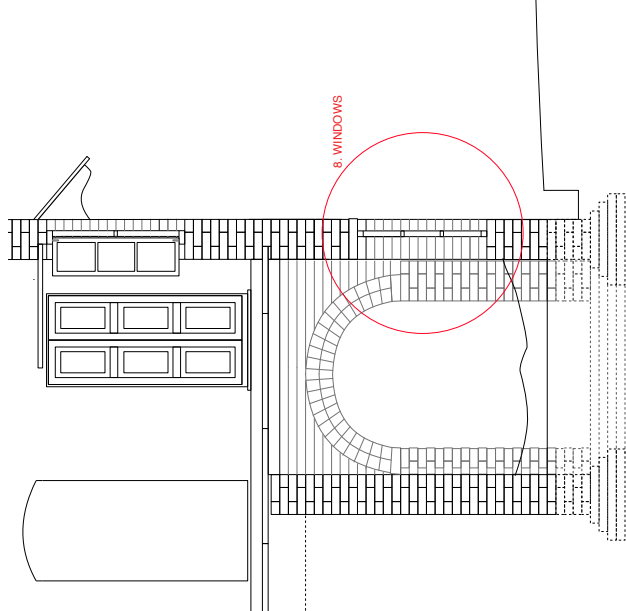
7. JACK ARCH CEILING/FLAT ROOF



7. FLAT ROOF: FINISH



JACK ARCH CEILING/FLAT ROOF: SLAB



Problems

8. WINDOWS

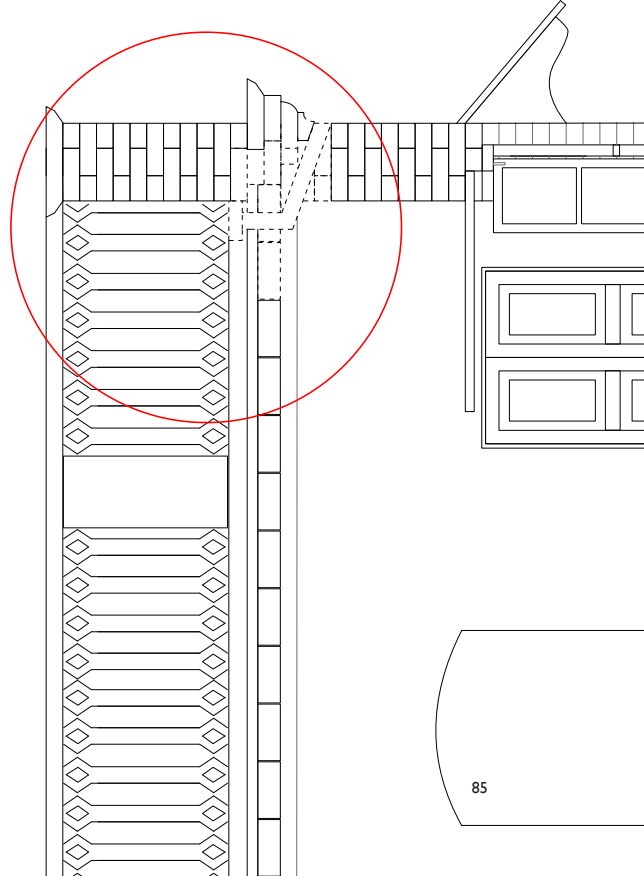
- Luckily, most of the openings to the basement rooms have a brick arch lintel: this has saved the building because the stone lintels have been removed from windows in the Old Gorethouse
- One window in Basement Room 2 has a broken stone lintel which probably held a stone rain-cover/shade like the window above it. This, sometimes combined with timber shutters was how previous owners managed to stay dry without glass in the windows.
- Timber door (rotten) with timber frame (rotten)
- Timber framed window frame (rotten) with simple grate (damaged)
- Bricked up
- Sink or non-existent - drip details are inadequate.
- Lack of shutters means there is no protection from rain for the basement rooms, and they also get very cold in winter.
- Plaster and brick cornice above is broken - no longer throws rainwater away from the windows.

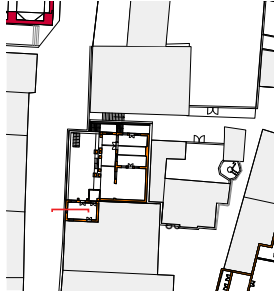


8. WINDOWS IN BASEMENT B



8. DOORS IN BASEMENT A (could become windows)





Problems

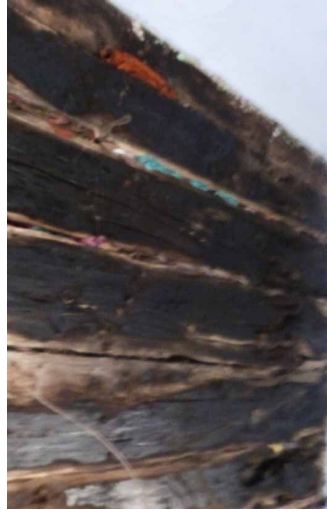
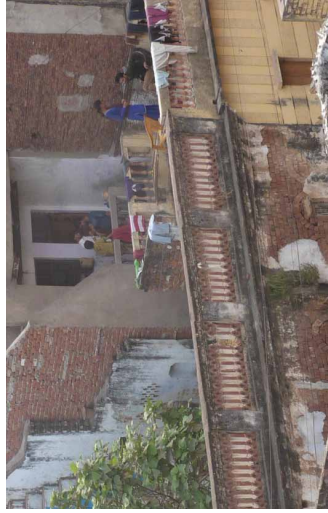
9. LEAKING FLAT ROOF

- The timber ceiling is soaking wet and rotten below the upper terrace. In rain it leaks badly and the family have tried to plug the leaks with rags and plastic bags.

10. UPPER TERRACE RAINWATER OUTLETS

- Access to the upper terrace has not been granted, as this is not the guesthouse building but the building next door (built by the same gentleman who built the guesthouse, but now the two buildings are owned by different people). The rainwater outlets on the converted end-portion of this building are above the top of the slab, and the rainwater outlets on the part above the rotten ceiling in question are below the slab. The rainwater outlets on the part above the rotten ceiling in question are below the slab, and the rainwater outlets on the part above the rotten ceiling in question are below the slab. Certainly, damage to the pointing, brick and coping, as well as the slab is allowing water into the structure.
- Certainly, damage to the pointing, brick and coping, as well as the slab is allowing water into the structure.
- Finally, the concrete slab has been badly laid above the ceiling - stopping damp evaporating and soiling in the ceiling.

At the moment, the repair of this ceiling is not being considered as part of the project, because we do not have access to this building.



References

Assumption: the original terrace was similar to a typical Indian madrasa roof, but in Basement Room 1 instead of a timber structure we have brick jack arches. The following is an explanation of a madrasa roof construction from the book, Building Construction by B. C. Punmia, Aditya Kumar Jain, Arjun Kumar Jain.

2. Brick jelly roofing or Madras terrace roofing

Fig. 15.37 shows the section through the roofing, which is

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BUILDING CONSTRUCTION

constructed in the following steps :

- Wooden joists are placed on R.S.J. with a furring piece in-between. The furring piece height at the centre is so adjusted that the required slope of the roof is obtained.

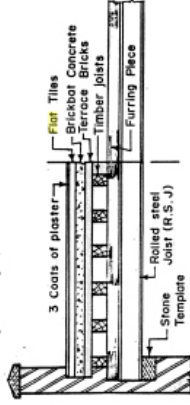


FIG. 15.37. MADRAS TERRACE ROOF.

(i) A course of specially prepared bricks of size 15 cm x 5 cm x 12 mm is placed on edge in **lime mortar** (1 : 1.5) laid diagonally across the joists.

(ii) After the brick course is set, a 10 cm thick layer of brick-bat concrete is laid, consisting of 3 parts of brick-bats, 1 part of gravel and sand, and 50 percent of **lime mortar** by volume. The concrete is well-runned for 3 days, so that the thickness reduces to 7.5 cm, by wooden hand beaters. The surface is cured for 3 days, by sprinkling **lime water**.

(iii) When the brick-bat concrete has set, three courses of Madras flat tiles (15 cm x 10 cm x 12 mm) are laid in **lime mortar** (1 : 1½), making a total thickness of 50 mm. The joints of the tiles in successive layers should be broken. The joints of tiles in top layer are left open to provide key for top plaster. Alternatively, China mosaic tiles may be used.

(iv) Finally, the top surface is plastered with three coats of **lime mortar**. The surface is rubbed and polished.

References

Indian Standard for lime concrete roof: how can this be altered to suit a brick arch construction rather than rcc slab?

5 MATERIALS

5.1 Lime
The suitable class C lime (full lime) in the form of hydrated lime conforming to IS 712 : 1964 shall be used. Quick lime shall be slaked in accordance with IS 1635 : 1975.

5.2 Pozzolanic Material
The pozzolanic material shall conform to IS 1344 : 1981. Lime pozzolana mixture when used shall conform to LP-40 of IS 4098 : 1983.

5.3 Coarse Aggregate
The coarse aggregate used in lime concrete having maximum size of 25 mm shall be broken brick (burnt clay) aggregate conforming to IS 3088 : 1968 or natural stone aggregate conforming to IS 383 : 1977 depending upon the situation of use.

5.4 Water
Water used for both mixing and curing concrete shall be clean and free from injurious amounts of deleterious materials. Sea water shall not be used. Potable water is generally considered satisfactory for mix.

6 PREPARATION OF LIME CONCRETE

6.1 Mortar for Concrete
The mortar for concrete shall be made on a clean water tight platform of sufficient size to provide ample mixing area. The platform shall have tight close joints so that there is no leakage of water or mortar through them and mixing tool does not strike the joints while in operation.

6.1.2 Aggregate and lime pozzolana mortar in the proportion of 2% : 1 parts by volume shall be used.

Coarse aggregate shall be slaked to an even surface on the platform and lime pozzolana mortar prepared as per 6.1 shall then be evenly spread over the aggregate and the whole thoroughly mixed water in just sufficient quantity that is applied with a sprigener, to enable the mortar to adhere to the aggregate. The mortar shall be applied to the aggregate in such a manner that the mortar will fill all the particles of aggregate are covered with mortar and a concrete of uniform appearance and consistency is obtained.

6.2 Coarse Aggregate

If coarse aggregate contains excessive dirt it shall be washed and well drained before use. Burnt clay or other deleterious material shall be thoroughly soaked in water for a period not less than 24 hours before use in concrete mix.

6.3 Mixing
The mix may be hand mixed or small hand operated mixer may be used. For larger quantities the use of mechanical mixer would be desirable.

6.3.1 Hand Mixing
The mix shall be done on a clean water tight platform of sufficient size to provide ample mixing area. The platform shall have tight close joints so that there is no leakage of water or mortar through them and mixing tool does not strike the joints while in operation.

6.3.2 Aggregate and lime pozzolana mortar in the proportion of 2% : 1 parts by volume shall be used. Coarse aggregate shall be slaked to an even surface on the platform and lime pozzolana mortar prepared as per 6.1 shall then be evenly spread over the aggregate and the whole thoroughly mixed water in just sufficient quantity that is applied with a sprigener, to enable the mortar to adhere to the aggregate. The mortar shall be applied to the aggregate in such a manner that the mortar will fill all the particles of aggregate are covered with mortar and a concrete of uniform appearance and consistency is obtained.

References: continued

solution is brewed for 12 to 24 hours. The resulting liquor is decanted and used for the work.

In some areas, METHI, jaggery and hemp are added while preparing and laying lime concrete.

7.4 Curing

The lime concrete after compaction shall be cured for a minimum of 10 days or until it hardens by covering with a thin layer of grass or straw which shall be kept wet continuously.

7.5 Treatment of Junction Between Roof Finish and Parapets

Along the junction of the roof surface with the masonry of the parapet wall, a strip of lime concrete shall be provided. The details of the parapet wall and the junction between lime concrete water proofed roof finish and masonry and RCC parapet walls are illustrated in Fig. 1 and 2 respectively.

8 FINISH

8.1
B.1. A base of workable roof finish on the layer of burnt clay that provides tiles (see IS 9900 Part 1), 1975 and IS 2690 (Part 2) : 1973) may be laid over a thin layer of lime mortar. However, in the extreme condition where there is considerable expansion and contraction, two layers of this may be put on the top of the lime mortar. The mortar should be made with good quality impure mortar. The top layer should be made with a proportion of 5 parts burnt engine brick by weight of cement and finished red.

8.2
The protection against water penetration for the roof finish is enhanced by efficient drainage of surface water.

8.2.1
For this purpose, the slope of the terrace with lime concrete and tile finish shall not be less than 1 in 60 and the slope in the case of plain lime concrete finish shall not be less than 1 in 50.

8.2.2

For every 40 m² of roof area, one 100 mm diameter rain water pipe shall be provided.

NOTE—Lime concrete may also be prepared by mixing the aggregate (inclusive of brick dust) obtained during drying with slaked lime in the same proportions by volume as in 6.3.2. The aggregate shall be thoroughly soaked before use.

6.4
The lime concrete shall be used in the work within 36 hours of the preparation of lime mortar if burnt clay pozzolana is incorporated (see IS 2541 : 1974).

NOTE—Addition of 12 kg of washing soap and 4 kg of alum in each cubic metre of lime concrete dissolved in water will improve the waterprooing quality of the lime concrete.

7 LAYING

7.1
The roof surface shall be prepared as given in 4.

7.2
Laying of lime concrete shall be started from a corner of the roof and proceed diagonally towards centre and other sides considering the slopes required for draining the rain-water smoothly. The average thickness of lime concrete shall not be less than 100 mm. In case the thickness is more than 100 mm, the top layer shall not be more than 100 to 125 mm. The top layer shall be laid in 60 to 80 mm lifts. However, in case of heavy rainfall area the top layer shall be laid in 80 mm lifts. The minimum compacted thickness of the concrete layer shall, however, be nowhere less than 50 mm.

After the lime concrete is laid, it shall be evenly rammed with a rammer weighing not more than 2 kg and the finish brought to the required evenness and slope. Alternately bamboo strips may be used for the purpose. The strips shall be laid parallel to the slope and the concrete shall be rammed and sledged. The workmen shall close together and beat the surface against the rammer and not too gradually. The beating will normally have to be carried on for at least seven days until the THAPI makes no impression on the surface and rebounds readily from it when struck.

7.3
The curing of lime concrete shall be done by spraying with water. The spraying machine which has been developed by Central Building Research Institute, Roopnagar and is commercially available.

7.3.1

If the surface during the process of compaction becomes too uneven that water lodges in pools, the surface shall be picked up and fresh lime concrete spread and consolidated as it is necessary so as to ensure proper slope and levels are being maintained with adequate bonding between old and new layers. The curing of lime water (1 part of lime water (1 part of putty and 3 to 4 parts of water) with any of the solution prepared under 7.3.3.

7.3.2
Special care shall be taken to properly consolidate the concrete at its junction with the parapet wall.

7.3.3

During compaction by hand-beating the surface shall be sprinkled liberally with lime water (1 Part prepared as under 7.3.3.1) and the surface shall be smoothed with a trowel. The surface shall be prepared by soaking in water the dry runs of Terrazzo chabola (see Note 2) to obtain improved waterprooing of the concrete. On completion of beating, the mortar that comes on the top shall be smoothened with a trowel or float, if necessary, with the addition of sugar solution and lime putty.

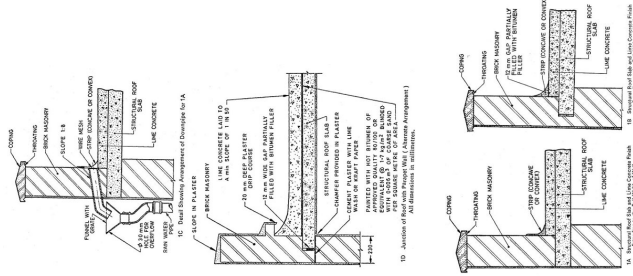
NOTES

The sugar solution is prepared in the northern parts of the country by mixing about 3 kg of jaggery and 1½ kg of BAFL, but to 100 litres of water by boiling.

The trowel and float shall be kept wet and allowed to soak in water.

The dry mix shall be broken to small pieces and allowed to soak in water.

The dry mix shall be broken to small pieces and allowed to soak in water. The general practice is to have a proportion 600 g of KADJUKAI, 200 g of jaggery and 40 litres of water for 10 m² work. This

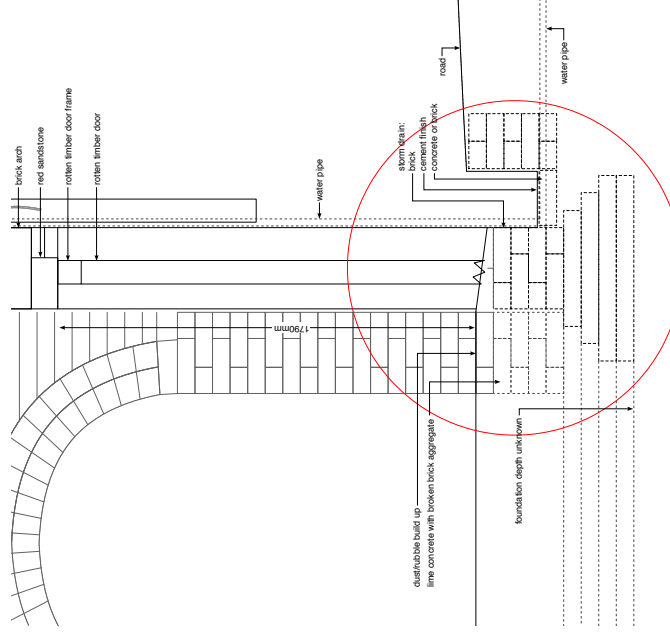


Strategy:

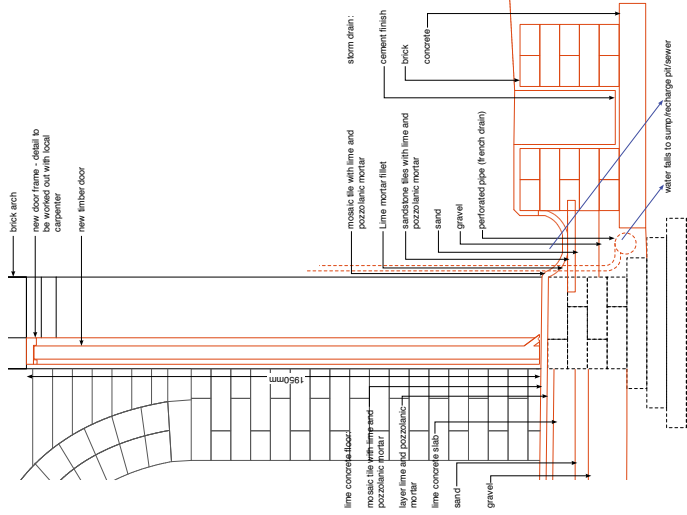
1. Breathable construction methods using lime rather than portland cement
2. Using flax and pizzlebic material in the plaster along with bits of 1"40 on floors and terraces to encourage water to run off the surface, combined with well designed and sealed outlets.
3. Trying to decrease heat loss in the winter by finding the most insulative lime concrete mix for the walls, or by laying the basement floor slabs on top of a breathable, granulate, insulative layer, perhaps gravel.
4. At all times considering drainage away from the building in the case of flood, or overflow from storm drain **05**
5. At all times using methods that use local craftsmen, and can be replicated and afforded by other people in the neighbourhood.

Proposed Repairs

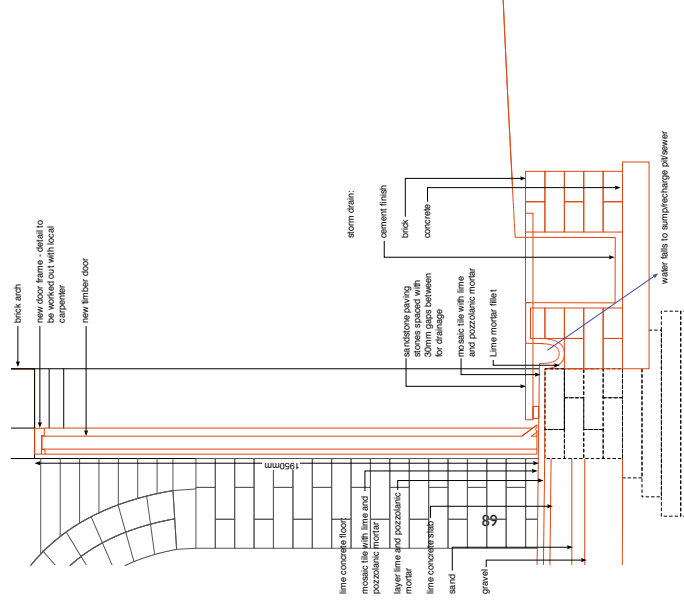
1. THRESHOLD



EXISTING

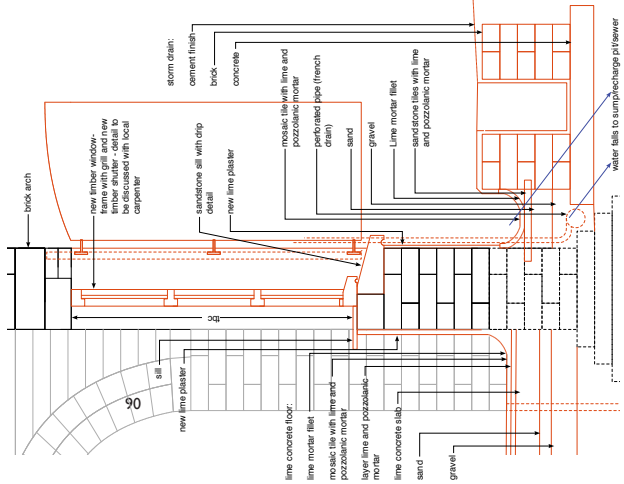


PROPOSED DRAIN OPTION 4. USED IF FOUNDATION WALL IS FOUND TO STILL HAVE STRUCTURAL INTEGRITY

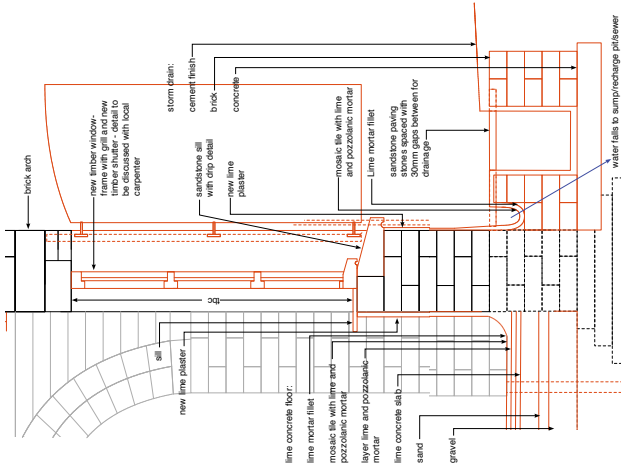


PROPOSED DRAIN OPTION 2. USED IF FOUNDATION WALL IS FOUND NOT TO HAVE STRUCTURAL INTEGRITY

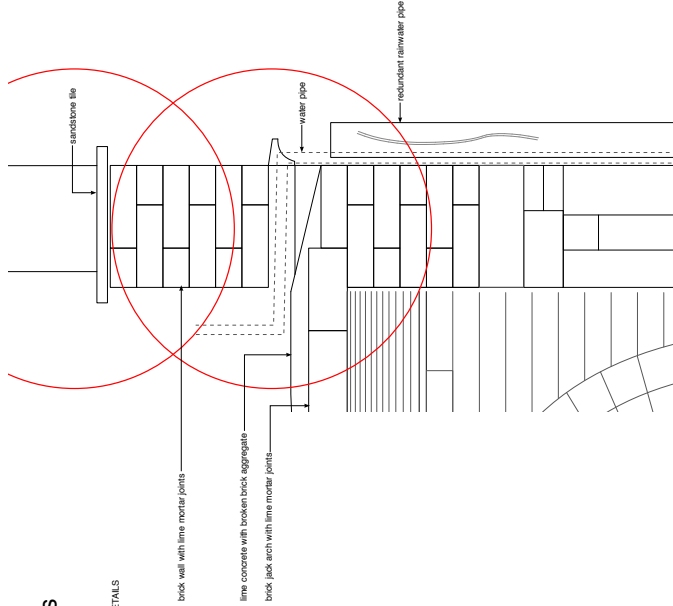
DRAIN OPTION 1: USED IF FOUNDATION WALL IS FOUND TO STILL HAVE STRUCTURAL INTEGRITY



DRAIN OPTION 2: USED IF FOUNDATION WALL IS FOUND NOT TO HAVE STRUCTURAL INTEGRITY



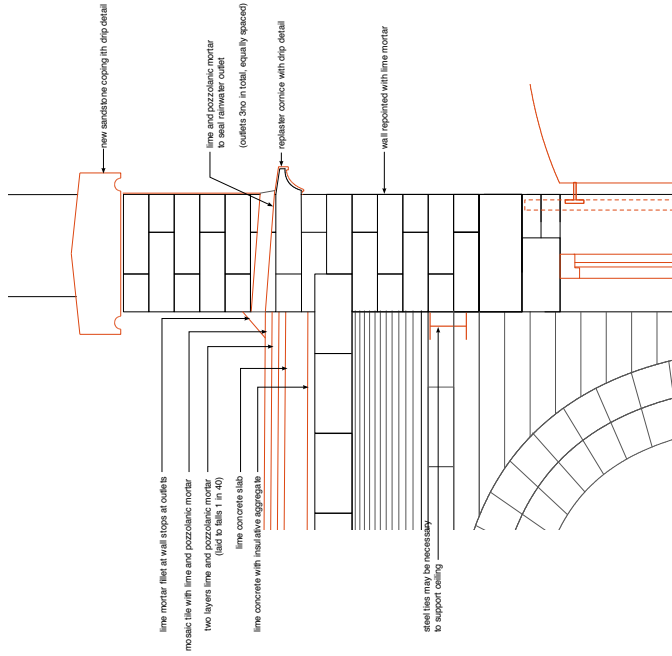
ALTERNATIVE PROPOSED DESIGN: CONVERT DOORWAY TO WINDOW TO GIVE MORE PROTECTION FROM FLOOD AND COLD



Proposed Repairs

2. RAINWATER OUTLETS
3. PLASTERWORK, CORNICES AND DRIP DETAILS
4. COPING

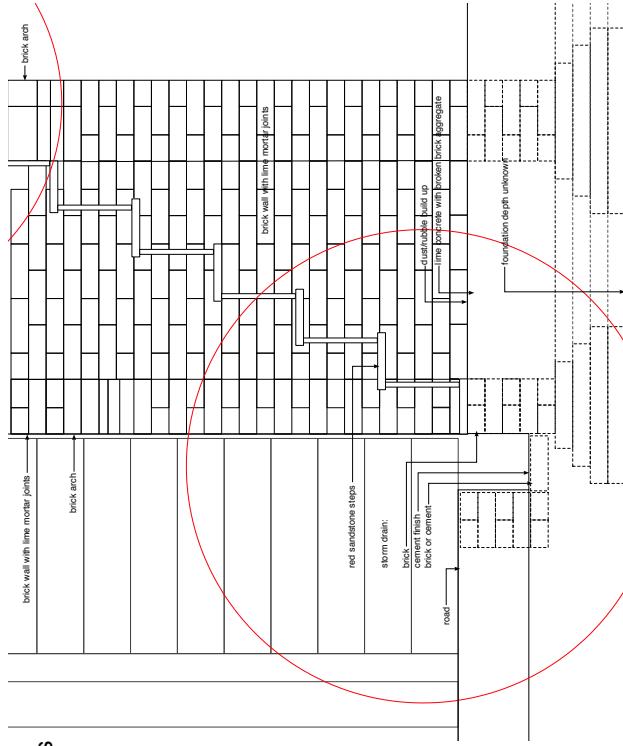
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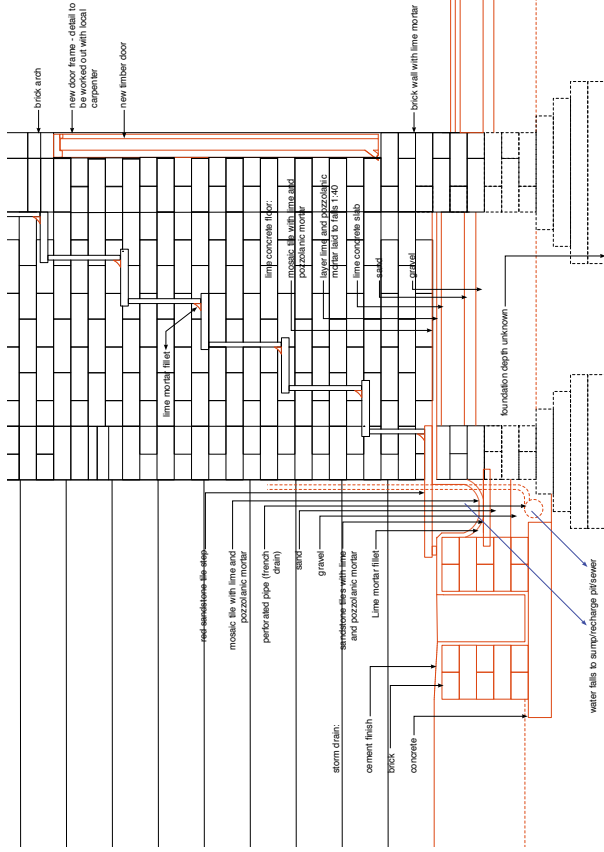


PROPOSED

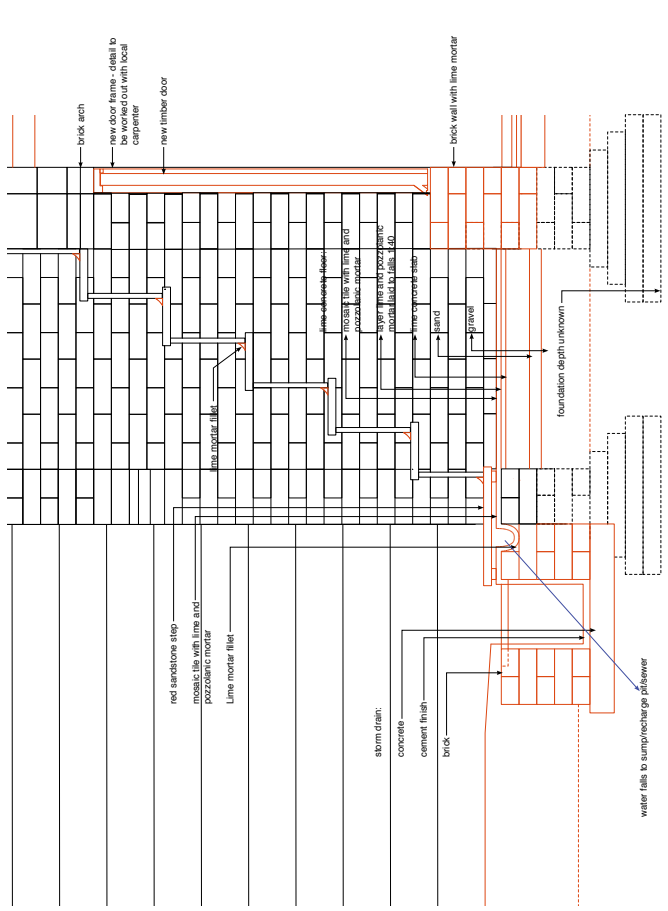
Proposed Repairs

5. THRESHOLD AT STAIRCASE





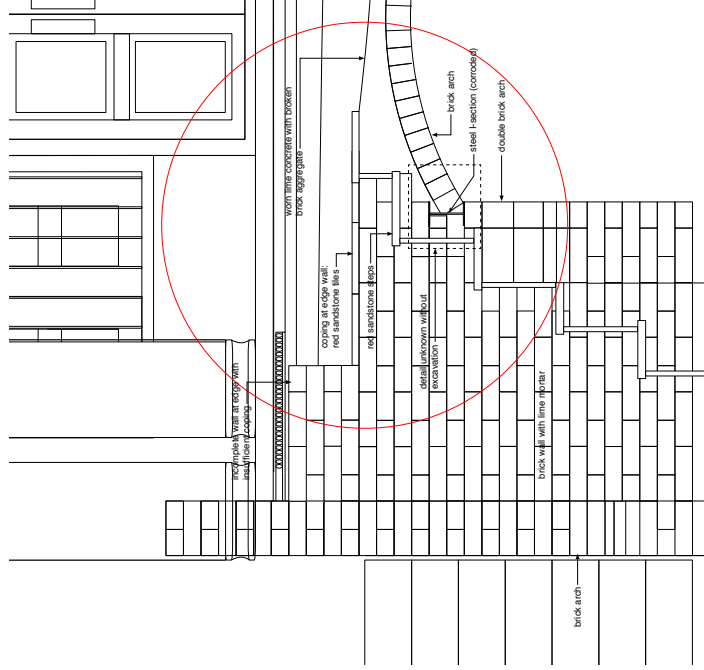
PROPOSED DRAIN OPTION 1: USED IF FOUNDATION WALL IS FOUND TO STILL HAVE STRUCTURAL INTEGRITY



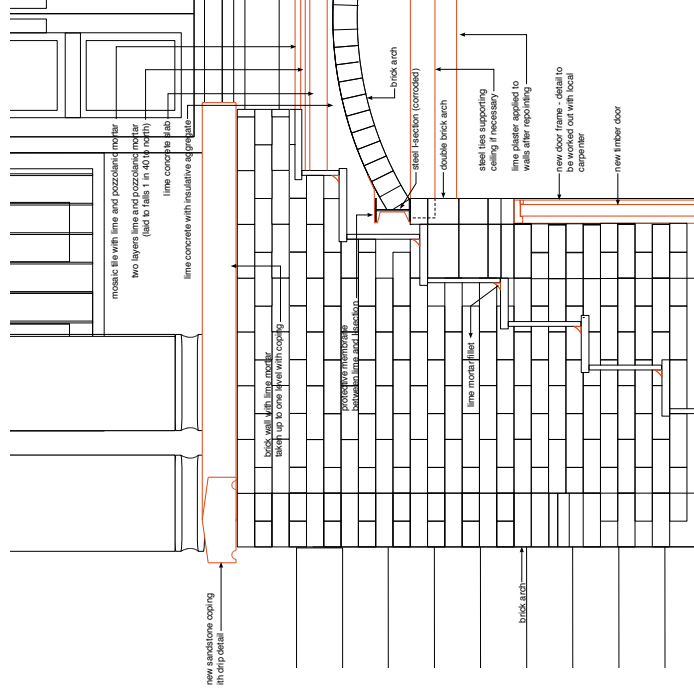
PROPOSED DRAIN OPTION 2: USED IF FOUNDATION WALL IS FOUND NOT TO HAVE STRUCTURAL INTEGRITY

Proposed Repairs

6. JUNCTION BETWEEN STAIRCASE AND TERRACE FLOOR



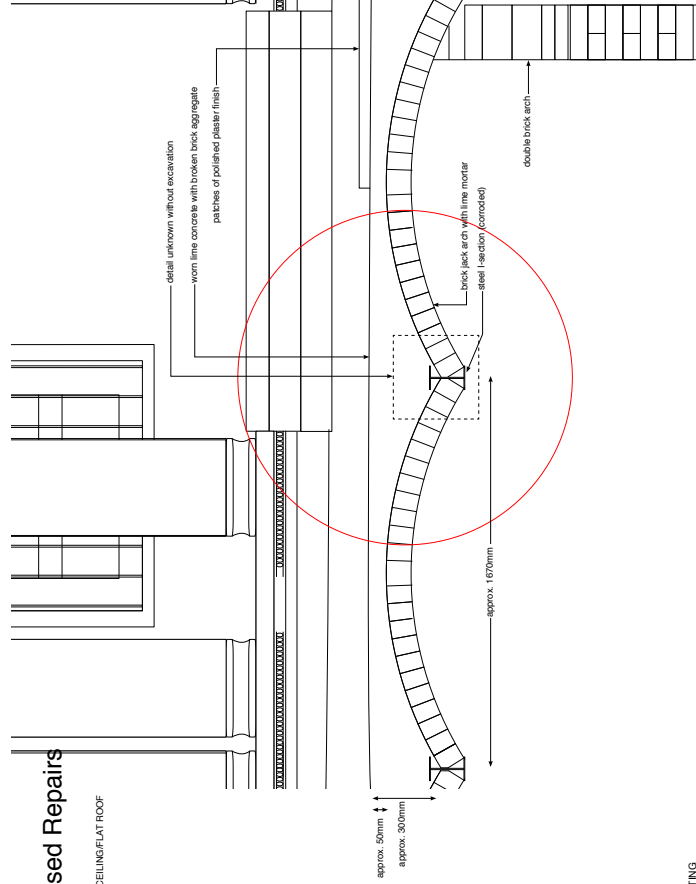
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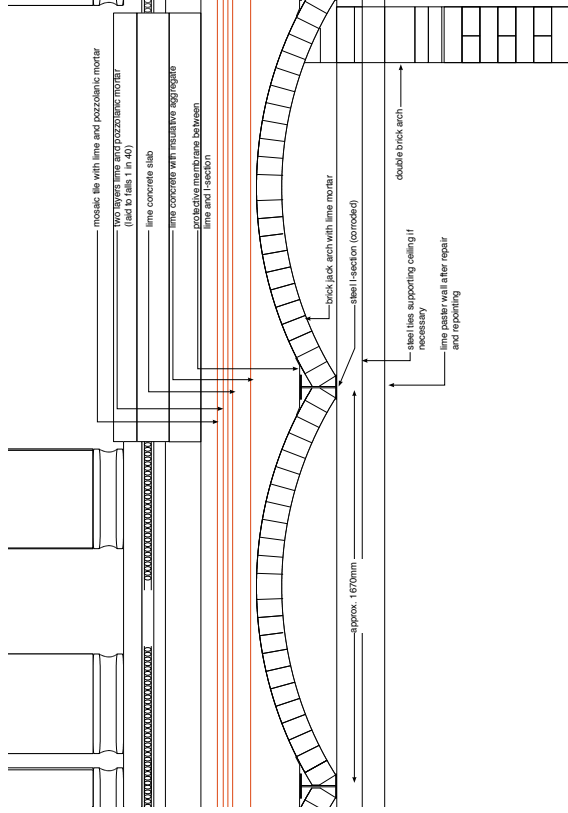
PROPOSED

Proposed Repairs

7. JACK-ARCH CEILING/FLAT ROOF

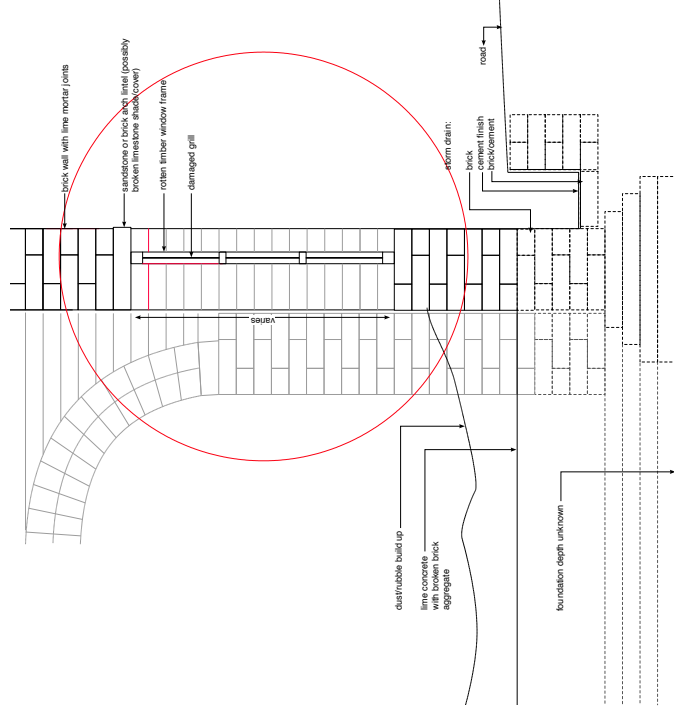


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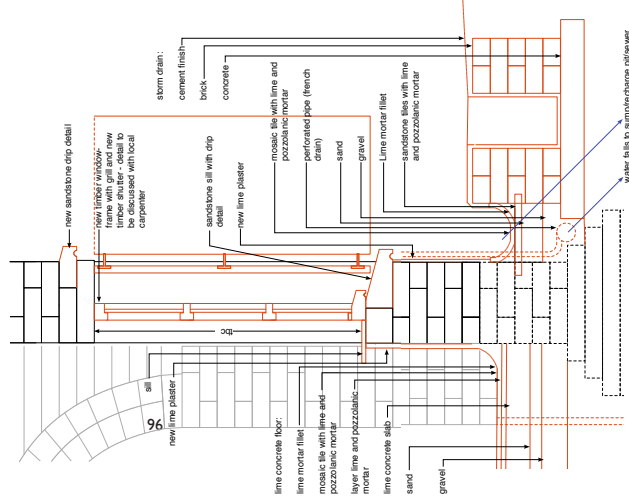
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Proposed Repairs

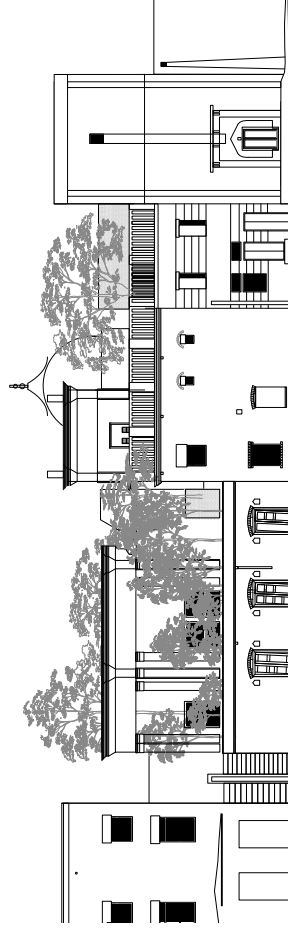
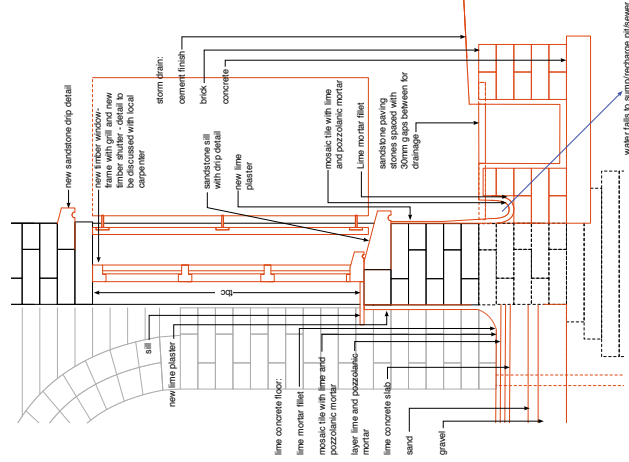


8. WINDOWS

DRAIN OPTION 1: USED IF FOUNDATION WALL IS FOUND TO STILL HAVE STRUCTURAL INTEGRITY



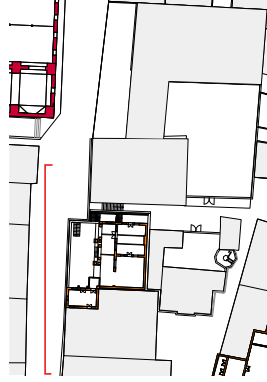
PROPOSED DRAIN OPTION 2: USED IF FOUNDATION WALL IS FOUND NOT TO HAVE STRUCTURAL INTEGRITY



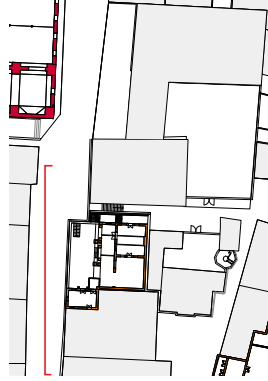
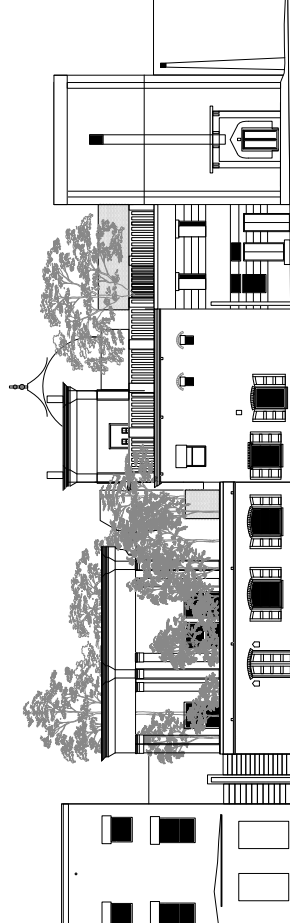
Repairs

8 WINDOWS: Effects on Elevation

Shutters and rising door thresholds will improve conditions inside the building but these changes have a significant effect on elevation



Existing Elevation AA 1:100



Proposed Elevation AA 1:100

