Fieldtrip 1. November - December 2012

Fieldtrip 2. March - April 2013

Fieldtrip 3. October - December 2013

Fieldtrip 4. April - May 2014

Fieldtrip 5. September - November 2014
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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.
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.
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.
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
Committees

All Residents

Workers cross the graveyard to highway

Burial

Gambling/cards

Pay respects

Children play here

Pay for gravedigger and building for resting the bodies

Stop encroachment

Arrange festivals

Sort out arguments

Maintenance

Lobby for streetlights and amenities

Keep burial rights for this community only

Area where committee constituents reside

Committee meeting point

Area maintained by committee

Committee meeting point

Kabristan

Pay respects
Maps made by residents during transect walk exercise
Resident maps overlaid
Type 1: Celebrated Fragments

Saints’ Graves (relevant since day 1)

Children play in clean open space

Priest

Sweeping

Arrange festivals

Maintenace Committee

Pray

All Residents

Children play in clean open space
Type 1: Celebrated Fragments

Sikawar Temple (relevant since day 1)

Sikawar Temple

Committees

Marble work

Arti

Arrange festivals

Look after open space outside

Sort out fights

All Residents

Pray

Use for water and washing

Animals graze in open space
Type 1: Celebrated Fragments

Kabristan (regained relevance when threatened)

Kabristan

Committees
- Lobby for streetlights and amenities
- Maintainence
- Sort out issues
- Arrange festivals
- Stop encroachment

All Residents
- Children play
- Can cross the graveyard
- Respect the dead
- Gambling/cards

Keep graveyard for this community

Arrange festivals

Stop encroachment

Sort out issues

Lobby for streetlights and amenities

Maintainence
Lodi Temple (reinvented as relevant by a new group)

Lodi Temple

Committees
- Sort out issues
- Arrange festivals
- Arrange annual fair
- Control jasmine trading
- Control their part of bazaar street
- Maintainance

All Residents
- Spend time in open space
- Participate in fair
- Water
- Worship
Spend time in open space

Craft Display
Creative Challenge
Structured Interview

Working Outwards
Discovering Unexpected Things
Unknown Goal
Questioner as Guest
Participants in Control
Open Invitation to Participants

Closing In
Testing Expected Results
Specific Goal
Questioner as Host
Questioner in Control
Participants Chosen
Participants:
- Host

Questioner:
- Hosts

Quantitative Data

Qualitative Data

Observing traditional skills

Developing skills

Transect walk (themed)

Applying existing skills

Spelling Exhibitions

Applying developed skills

Mapping exercise

Observing existing interests

Questionnaire

Collaborative Projects
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, (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
Sikawar temple
Sikawar temple
Small industrials units in Diwanji ka Mohalla: test-tube manufacture (left) and pottery (right).
Small industrials 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, Bilocpur
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
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 ________

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 ________

5. Whether the property is owned by the individual or jointly (furnish documents) ________

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) ________

7. Locality of the proposed construction (with full details plot number, etc.) ________

8. Name of the nearest monument or site: Rauza Diwanji Begum and Mosque Diwanji ka Mohalla, Tajganj
   (a) Locality : Sadar
   (b) Taluk : Agra
   (c) District : Uttar Pradesh
   (d) State : ________
   (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:
   (a) Distance from the main monument: ________
   (b) Distance from the protected boundary wall of the monument: ________

10. Nature of the work proposed: ________
   (repair/renovation/construction/reconstruction, etc.) REPAIR

11. Details of work proposed
   (Furnish complete details with drawing of building/structure)
   i) Number of storeys ________
      Existing: 2.5 storeys. No additional storeys proposed
   ii) Floor area (Storey-wise) ________
      Existing Floor Area: Lower storey: 90 sqm; Upper storey: 180 sqm
      No additional floor area proposed
   iii) Height (excluding mumty, parapet, water-storage tank, etc.) ________
      Existing height: 8m. No additional height proposed
      As above: 8m
   iv) Height (including, mumty, parapet, water-storage, tank, etc.) ________
      No full basement. Lower storey area included in ii) No additional basement proposed.
   v) Basement, if any proposed with details ________

   (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/commercial/institutional/public/community)
   Residential

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
First Steps

1. Engineer's advice is needed for the following before work can proceed/funding be determined:

a) Will there be problems with damp seepage from the retaining wall at the back (south edge) of the street level basement rooms?

b) Is it cheaper to stabilize the upper level structure or demolish it?

c) What effects will demolition of the upper structure have on the street level rooms? How can they be made safe if the demolition happens?

d) What is the best way to deal with the trees currently growing in the floor of the upper structure? If they are left, will stability of the entire structure be assured?

e) Level of concern for each opening in floors and ceiling will need evaluation. These surfaces need support. In situations, where concrete slab and finished above can be specified, on-reinforced slab above necessary to stabilise the ceiling? Alternatively, installing joists in second floor would be preferable. We would prefer not to specify Portland cement concrete or mortars.

f) Condition of bricks in the wall below road surface level: if they have been damp for many years they may be beyond saving and have no structural integrity. In this case, some attention needs to be given to the fact that the new road will likely apply force on one side and the base further away by the slab on the other side.

Note: Lower level will temporarily need to have one opening unlocked/unblocked in order for engineer to get access to the lower level rooms.
Large cracks in wall caused by removal of stone lintels above windows
Terrace above Basement Room 1, showing ruined Old Guesthouse building behind.
1. Threshold
2. Terrace Rainwater Outlets
3. Plasterwork, Cornice and Drip Details
4. Coping

Basement Room 1 Facing North-West
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 wall of the house. This causes severe damp problems in the walls of the house. On top of this, high levels of sewage in the drain make the basement rooms unhealthy and smelly.
- Unknown present whether bricks against drain have any remaining structural integrity.
- Timber doors have been rotted from the bottom up by drain water.
- Any flooding of the storm drain means that the basement rooms flood, filled with polluted drain water.
- When the house was built, the road was compacted earth, which allowed evaporation of moisture - when the foundation walls got damp, they could dry out again. Now the road is covered in watertight materials, locking damp into the foundation walls.

2. TERRACE RAINWATER OUTLETS
- Rainwater runs off terrace through holes made in balustrade below the cornice. Some outlets leak 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 have been removed.
- Damage to pointing and to floor surface means that a large amount of rainwater runs into the building structure rather than off the building.
- Lack of pipe or drip detail means that water 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 falls was laid on top of these bricks.

4. COPING
- A layer of tiles has been laid at some point on top of the balustrade 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.

5. THRESHOLD AT STAIRCASE

6. JUNCTION BETWEEN STAIRCASE AND TERRACE FLOOR
Problems

5. THRESHOLD AT STAIRCASE
- The stairs are partly broken 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 sewage in the drain make the basement rooms unhealthy and smell bad.
  - 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.
- An edge may need to be created with lime concrete or mortar and stone under the top stair before a new slab is poured.

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 point the bricks of the jack arch actually show through in the floor of the terrace above) and on top of this water outlet detail have become damaged, the roof is no longer water tight. The terrace floor is sandy/earthy - probably the result of the lime concrete slab rubbing away.

- It appears that the original slab is a mix of large aggregate/bricks and lime mortar, covered in a layer of lime concrete with smaller aggregate. This would 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 pozzolanic material for better water run-off. This is probably what the rest of the terrace floor was covered with also.

- I-sections between the jack arches are corroded. This may well have been exacerbated by a reaction with lime from the pointing and slab above. The detail of how the steel is protected from the lime is unknown without excavation. Air inside the basement rooms would have at times been very moist, causing corrosion too.

8. WINDOWS
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 Guesthouse upstairs, causing the building to partially collapse.

• One window in Basement Room 2 has a broken stone lintel which probably held a stone raincover/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.

• Windows and openings either contain:
  - Timber door (rotten) with timber frame (rotten)
  - Timber framed window frame (rotten) with simple grate (damaged)
  - Blocked up
  - Sill details are worn 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.
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 two brothers). However, the photograph of the elevation opposite shows that rainwater outlets on the converted part of this building are above the top of the slab, and the rainwater outlets on the part above the roofs in question are below the slab. Either previously the detail was something like the detail drawn (left) which now leaks into the slab, or the slab has been raised, and a proper outlet detail has not been reached.
- Certainly, damage to the pointing, brick and coping, as well as the slab is allowing water into the structure.
- It is possible that a concrete slab has been badly laid above the ceiling - stopping damp evaporating and locking it 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 madras roof: but in Basement Room 1 instead of a timber structure we have brick jack arches. The following is an explanation of a madras roof construction from the book Building Construction by B.C. Punmia, Ashok Kumar Jain, Arun Kumar Jain

2. Brick jelly roofing or Madras terrace roofing

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

![Diagram of Madras Terrace Roofing](image)

Consequently in the following steps:

(i) Wooden joints are placed on R.S.I. with a furring piece in-between. The furring piece height at the centre is so adjusted to the required slope of the roof that is obtained.

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

(iii) The concrete is well-rammed 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.

(iv) When the brick-bat concrete has set, three courses of Madras flat tiles(15 cm × 10 cm × 12 mm) are laid in lime mortar (1 : 1), making a total thickness of 50 mm. The vertical 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.

(v) Finally, the top surface is plastered with three coats of lime mortar. The surface is rubbed and polished.
NOTE—Lime concrete may also be prepared by mixing the aggregate inclusive of brick dust obtained during breaking 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 3068 : 1986) or natural stone aggregates conforming to IS 383 : 1970 depending upon the situation of use.

5.1 Lime
As far as possible class C line (fat lime) in the form of hydrated lime conforming to IS 712 : 1984 shall be used. Quick lime shall be slaked in accordance with IS 1635 : 1975.

5.2 Pozzolanic Material

5.3 Coarse Aggregate
Coarse aggregate for use in lime concrete having maximum size of 25 mm shall be broken brick (burnt clay) aggregates conforming to IS 3068 : 1986 or natural stone aggregates conforming to IS 383 : 1970 depending upon the situation of use.

5.4 Water
Water used for both mixing and curing concrete shall be clean and free from impurities 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
One part of slaked lime and two parts of burnt clay pozzolana (or lime pozzolana mixture) by volume shall be mixed on a water tight platform. This shall then be sprinkled with the required quantity of water and shall be well ground in a mill or using mechanical grinder. Hand pounding may be done for small quantity. If hydrated lime is used adjustments shall be made in the proportion in accordance with IS 712 : 1984.

6.2 Coarse Aggregate
If coarse aggregate contains excess dirt it shall be washed and well drained before use. Burnt clay or other porous coarse aggregate shall be thoroughly soaked in water for a period not less than six hours before use in concrete mix.

6.3 Mixing
Lime concrete may be hand mixed or small hand operated mixer may be used. For larger quantities a suitable mechanical mixer will be desirable.

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

6.3.1.2 Coarse aggregate and lime pozzolana mortar in the proportion of 3:1 by parts shall be used. Coarse aggregate shall be dosed 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 with water just sufficient quantity shall be applied with a sprinkler, to enable the mortar to adhere to each piece of aggregate. The mixing shall be done by turning it over and over several times, until all the particles of aggregate are covered with mortar and a concrete of uniform appearance and consistency is obtained.

6.3.1.3 This operation shall be repeated until proper consolidation is achieved.

6.3.2 After the mixing is complete the concrete shall be transferred to a suitable mixing pan and properly mixed. If coarse aggregate contains excess dirt it shall be washed and well drained before use. Burnt clay or other porous coarse aggregate shall be thoroughly soaked in water for a period not less than six hours before use in concrete mix.

6.3.3 The mixing shall be done by turning it over and over several times, until all the particles of aggregate are covered with mortar and a concrete of uniform appearance and consistency is obtained.

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

6.5 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.

6.6 Treatment of Junction Between Roof Finish and Parapets
All along the junction of the roof surface with the masonry of the parapet wall, a strip of lime concrete fillet shall be laid and finished smooth. Typical details of treatment at junction between lime concrete water proofed roof finish and masonry and RCC parapet walls are illustrated in Fig. 1 and 2 respectively.

7. FINISH

8.1 In case of accessible roof finish one layer of burnt clay flat terracing tiles (see IS 2690 Part 1) : 1975 and IS 2690 (Part 2) : 1975) may be laid on a thin layer of lime mortar. However, in the extreme condition where there is considerable expansion and contraction, two layers of tiles may be put on the top of lime pozzolana concrete. The tiles should be jointed with non-shrinking impervious mortar by adding suitable integral waterproofing admixtures or 5 percent used engine oil by weight of cement and finished neat.

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

9. REFERENCES

References: continued
Strategy:


2. Using tiles and pozzolanic material in the plaster along with falls 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 terrace floor, and laying the basement floor slab on top of a breathable, drainable, insulative layer, perhaps gravel.

4. At all times considering drainage away from the building in the case of flood, or overflow from storm drain.

5. At all times using methods that use local craftsmen, and can be replicated and afforded by other people in the neighborhood.

Proposed Repairs

1. THRESHOLD

EXISTING

dust/rubble build up

red sandstone

rotten timber door frame

rotten timber door

foundation depth unknown

brick arch

red sandstone

water pipe

brick cement finish

concrete or brick

water pipe

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

- brick arch
- new door frame - detail to be worked out with local carpenter
- new timber door
- mosaic tile with lime and pozzolanic mortar
- lime concrete floor:
  - mosaic tile with lime and pozzolanic mortar
  - layer lime and pozzolanic mortar
  - lime concrete slab
  - sand
  - gravel
- perforated pipe (French drain)
- storm drain:
  - cement finish
  - brick
  - concrete
- water falls to sump/recharge pit/sewer

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

- brick arch
- new door frame - detail to be worked out with local carpenter
- new timber door
- sandstone paving stones spaced with 30mm gaps/drainage
- mosaic tile with lime and pozzolanic mortar
- lime concrete floor:
  - mosaic tile with lime and pozzolanic mortar
  - layer lime and pozzolanic mortar
  - lime concrete slab
  - sand
  - gravel
- storm drain:
  - cement finish
  - brick
  - concrete
- water falls to sump/recharge pit/sewer
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
Proposed Repairs

5. THRESHOLD AT STAIRCASE

EXISTING

PROPOSED
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

- brick wall with lime mortar
- brick arch
- steel I-section (corroded)
- double brick arch

EXISTING

- red sandstone steps
- coping at edge wall: red sandstone tiles
- detail unknown without excavation
- incomplete wall at edge with insufficient coping
- worn lime concrete with broken brick aggregate

EXISTING
Proposed Repairs

7. JACK ARCH CEILING/FLAT ROOF

- Brick jack arch with lime mortar
- Double brick arch
- Steel I-section (corroded)
- Approx. 300mm
- Approx. 50mm
- Wear lime concrete with broken brick aggregate
- Detail unknown without excavation
- Patches of polished plaster finish
- New sandstone coping with drip detail
- Mosaic tile with lime and pozzolanic mortar
- Lime concrete slab
- Two layers lime and pozzolanic mortar (laid to falls 1 in 40)
- Lime concrete with insulative aggregate
- Lime plaster applied to walls after repointing
- Double brick arch
- Steel ties supporting ceiling if necessary
- New door frame - detail to be worked out with local carpenter
- New timber door
- Protective membrane between lime and I-section
- Lime concrete with insulative aggregate

EXISTING

PROPOSED
Proposed Repairs

8. WINDOWS

- Sandstone or brick arch lintel (possibly broken limestone shade/cover)
- Brick wall with lime mortar joints
- Dust/rubble build up
- Rotten timber window frame
- Damaged grill

Foundation depth unknown

Lime concrete with broken brick aggregate

Road

Storm drain: Brick cement finish Brick/cement varies

EXISTING

- Protective membrane between lime and I-section
- Lime concrete slab

Two layers lime and pozzolanic mortar (laid to falls 1 in 40)

Mosaic tile with lime and pozzolanic mortar

Steel ties supporting ceiling if necessary

Lime plaster wall after repair and repointing

Double brick arch

Steel I-section (corroded) approx. 1670mm

Brick jack arch with lime mortar aggregate

PROPOSED
Repairs

8. WINDOWS: Effects on Elevation

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