

**Architectural Conservation and Historic Preservation**  
**Prof. Sanghamitra Basu**  
**Department of Architecture and Regional Planning**  
**Indian Institute of Science, Kharagpur**

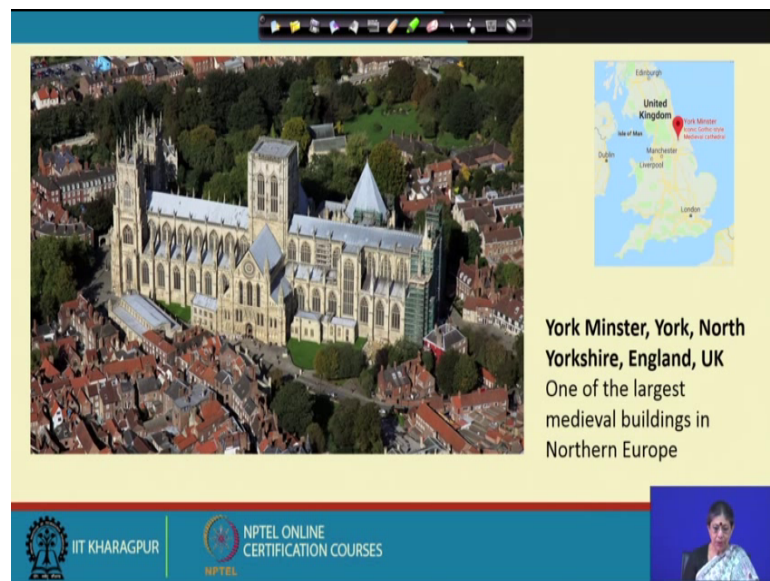
**Lecture – 29**

**Investigation and Conservation of Historic Structures Case Study 2 (Part b)**

In your last lecture we talked about underpinning of York minister that is cracks of visible and, how there was an unequal settlement differential settlement of this is and how it was restored back and, that it is in paroled and the danger who is about it and it still continue.

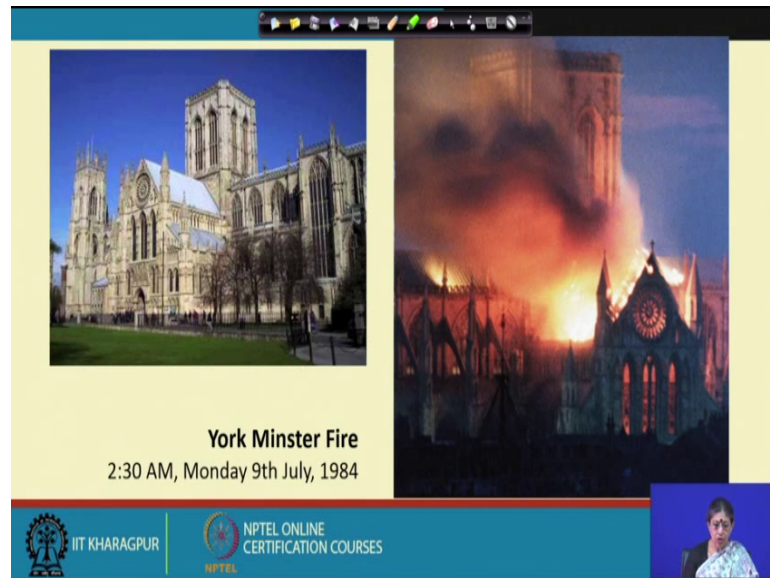
Let us talk about the other disaster which start York minister in 1984.

(Refer Slide Time: 00:45)



We have seen that in history that is so, beautiful structure what is happening today, remember there was a fire which happen in 1984.

(Refer Slide Time: 00:50)

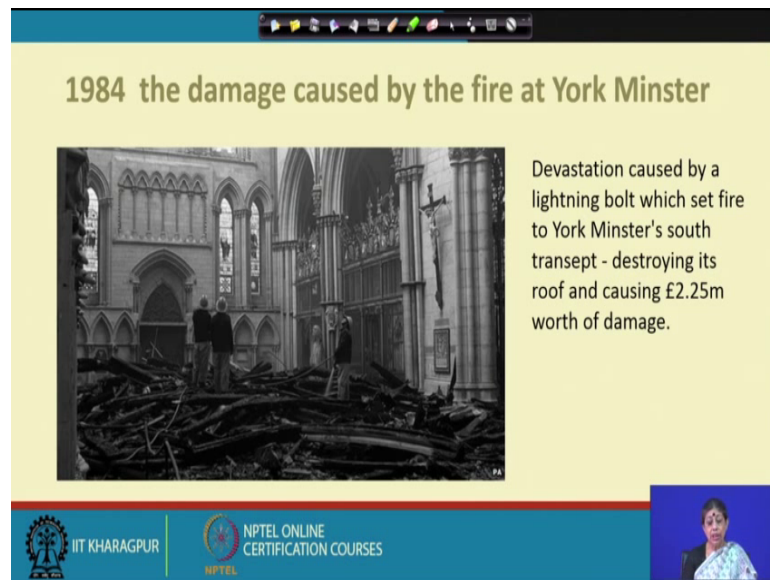


Now when this fire happened this all the church is a beautiful stain glass, you have look it beautiful stain glass and, during the second world war, what happened that a it was realise that many of these stain glasses were in danger.

So, from the various churches all over England so, they were taken down and they were stored in various places to avoid the damage due to the war. And during the war and after the war it was realise that many of the stain place glass (Refer Time: 01:22) were not in a good condition there joins are in condition and, you have been replaced the different section, different parts have been replaced over the year. So, there was an attempt an York was pioneer in that field, your gracious trust was formed and, they are already taking up the restoration of the stain glass.

Now, it was place there it was training also was in built there. So, before this 1984 fire happen the already the many of the stain glass parts, or stain glass windows were restored. So, and when this the rose window which is significantly very important, symbolically very important, for the Christians it has a sacred value and that actually was recently just before that was restored, because of the joints stain glass mains put back into to position the joints were strengthen within 94 it happened.

(Refer Slide Time: 02:24)



**1984 the damage caused by the fire at York Minster**

Devastation caused by a lightning bolt which set fire to York Minster's south transept - destroying its roof and causing £2.25m worth of damage.

IIT KHARAGPUR | NPTEL ONLINE CERTIFICATION COURSES

The devastation as you can see the devastation caused by a lightning bolt it happened due to lightning. So, nobody can help that, which set the fire to York minister's south transept and it destroying, it is roof the entire roof collapse and causing the 2.25 million of pounds worth of damage and, this is the scenario which happened.

Now, just a little we take this opportunity to remind you that we also talked about the Coventry cathedral weather roof collapse due to the war, we also talked about war. So, and their different approaches which are taken for the Coventry cathedral York actually decided to restore everything. So, right from the stain glass window to this roof which is totally destroyed? So, is another approach which has been taken, but while doing the stain glass window, it is again a very exemplary x case a which need to be studied.

(Refer Slide Time: 03:25)

1984 the damage caused by the fire at York Minster  
The Stained Glass Rose Window restored

The Rose Window after the fire  
In the fire many of the solder joints melted, but the lead didn't.

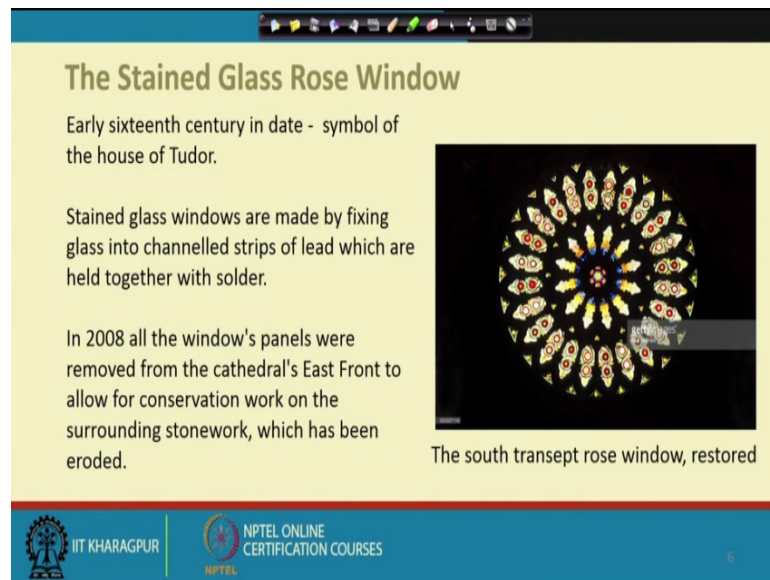
The south transept rose window, restored

IIT KHARAGPUR NPTEL ONLINE CERTIFICATION COURSES NPTEL

Now, this is a scenario of the rose window after the fire, in the in the fire many of the solder joints melted because of the high held, but the lead did not because you remember that just before that, they joints have been strengthen they were trying to replace and it is strengthen date. So, it was in quite a good conditions. So, what happen that the do the solder joints melted, but the lead did not so, they were this class space where in place and, this is what happened after the fire and this is when the rose window has been restored.

Now, when we are talking about restore and, we see that this class panes have the joints are still there, but the glass when have sought out, or in a very dangerous situation, what could have been done. The glass pane could have been made a fresh the rose window a new stain glass could have come up, but something different happened here.

(Refer Slide Time: 04:29)




**The Stained Glass Rose Window**

Early sixteenth century in date - symbol of the house of Tudor.

Stained glass windows are made by fixing glass into channelled strips of lead which are held together with solder.

In 2008 all the window's panels were removed from the cathedral's East Front to allow for conservation work on the surrounding stonework, which has been eroded.



The south transept rose window, restored

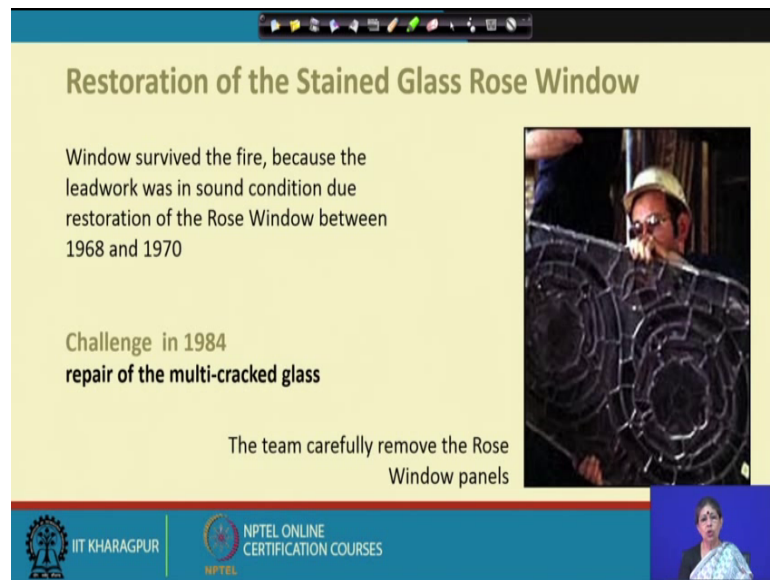
IIT KHARAGPUR | NPTEL ONLINE CERTIFICATION COURSES

But before we discuss that what is happen, what are the desaturation measure was taken for this stain glass window? Let see what is this about and what is the importance of the stain glass window. This goes back to early 16th century in date, it was the symbol of the house of Tudor, these are generally made by fixing of glass into channel strips of layered, which are held together with the solder, as you we are already discuss the solder melted, but the late in place because of the very recent strengthening of that.

In 2018 all the windows panels were removed from the cathedrals east front to allow for conservation work they replace some of the broken parts, or replace the parts which are not in how many because, even in a glass when it breaks somebody choice to change that. So, if see or fifteenth centuries angel head probably or 12th centuries, or 16th centuries a head will be replace of there was some sort of anomaly, which was there during this conservation process they are all taken care of and this conservation was in done in 2008 that is very recent.

But before that as I say during the war the all the glass pens with taken down and, the joints were restore. So, they were in quite a good condition when 1984 thing happen and, it is still continuing. So, this 2008 what I am talking about this still the restoration of the conservation of glass panes were happening and finally, it was restore, but please go back come back to the south transit story and, the stained glass of the rose window and, damaged it happened due to the fire.

(Refer Slide Time: 06:20)



**Restoration of the Stained Glass Rose Window**

Window survived the fire, because the leadwork was in sound condition due restoration of the Rose Window between 1968 and 1970

**Challenge in 1984**  
repair of the multi-cracked glass

The team carefully remove the Rose Window panels

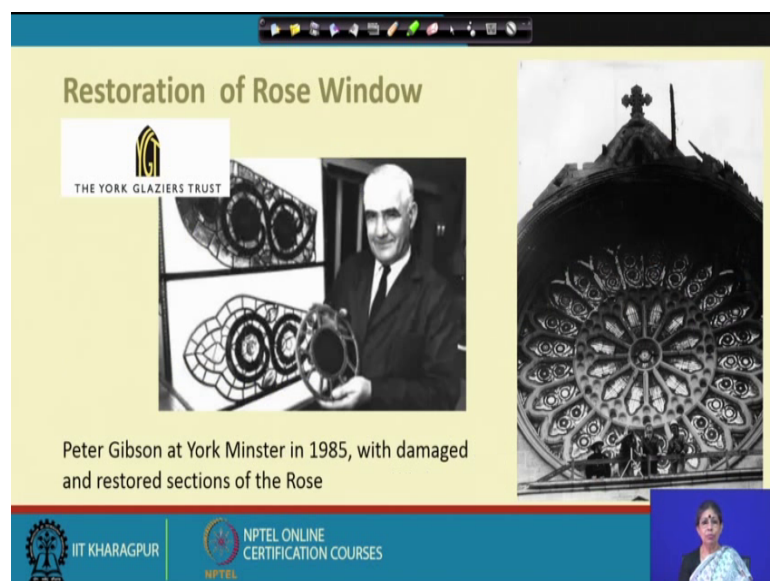
IIT KHARAGPUR | NPTEL ONLINE CERTIFICATION COURSES

The slide features a yellow background with a blue header and footer. The main content is in black text. A photograph on the right shows a man in a hard hat and safety glasses holding a large, intricate stained glass panel. The footer contains the logos for IIT Kharagpur and NPTEL.

As we discussed the window survived the fire, because of the leadwork it was in sound condition, because of the restoration between 1968 in 1970 the challenge in 1984 was the repair of the multi cracked glass, as you can see that the team is carefully removing the rose window panels from that what we this also after the fire.

So, what happen is that after the fire in the close inspection ok, leader of that your glaziers trust peter Gibson Mr. Peter Gibson, when he went up and saw he found that.

(Refer Slide Time: 07:00)



**Restoration of Rose Window**

THE YORK GLAZIERS TRUST

Peter Gibson at York Minster in 1985, with damaged and restored sections of the Rose

IIT KHARAGPUR | NPTEL ONLINE CERTIFICATION COURSES

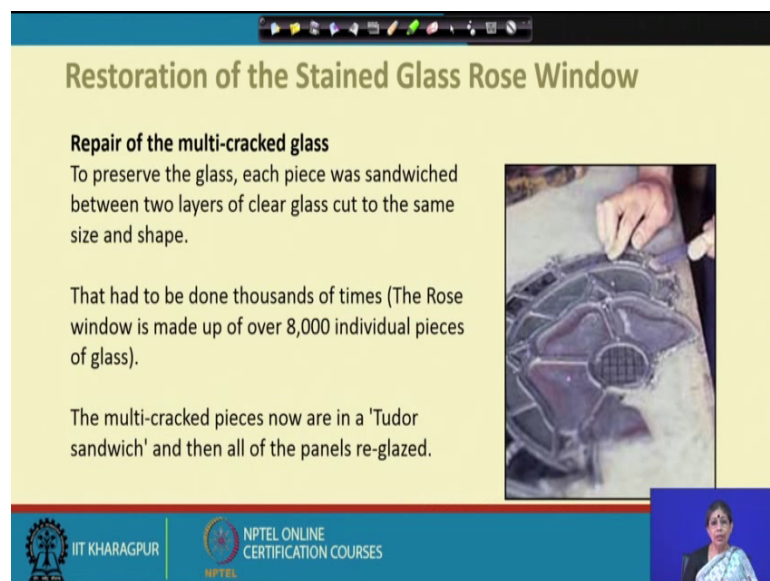
The slide features a yellow background with a blue header and footer. The main content is in black text. A photograph on the left shows a man in a suit holding a stained glass panel. A large photograph on the right shows a detailed view of a rose window. The footer contains the logos for IIT Kharagpur and NPTEL.

He is the Peter Gibson he started working there, when he was just very young at the age of 16. So, part of the York glaziers trust and he was the person who really care the leadership today's restoration of the stained glass window.

So, according to him what happened I mean we listen to him and he has a different write ups and other when his certain, start recollecting the incident that happened, is it when his was called that this is happened during the fire, the fabric it personal putting on the ladder and he went up and inspected closely to see that what is happen to this stain glass. He fall that the glasses are in position, but there are minute crafts in the glass because of the temperature, but they were in place and they were not fall in apart.

So, that was the decision that what to do about how to restore that rose window, or the stain glass window he talked to various experts various options, were tried out.

(Refer Slide Time: 08:03)



**Restoration of the Stained Glass Rose Window**

**Repair of the multi-cracked glass**  
To preserve the glass, each piece was sandwiched between two layers of clear glass cut to the same size and shape.

That had to be done thousands of times (The Rose window is made up of over 8,000 individual pieces of glass).

The multi-cracked pieces now are in a 'Tudor sandwich' and then all of the panels re-glazed.

The slide includes a photograph of a person's hands working on a stained glass piece, showing the intricate leaded glass design. The slide also features logos for IIT KHARAGPUR and NPTEL ONLINE CERTIFICATION COURSES at the bottom.

And finally, what was decided is to repair the multi cracked glass not to replace the multi cracked glass. So, repair the multi cracked glass how what how it can be happened. So, what he did is that to preserve the glass each piece of the original glass which is cracked, it is conciliated by injecting adhesive and, then that glass was sandwiched between 2 layers of clear glass and cut to the same size and shape.

So, that original glass remained consolidated with injecting and adhesive fluid and, then it was put in between sandwich in between the 2 clear glass and for each and every piece,

it was done that has to be 1000 of time because it is rose window was made up of over 8000 individual pieces of glass.

So, each part has to be taken down consolidated by injecting and, then it has to be sandwich and, then it has to be put path. So, very laborious process it took years, but that was decided not to take the easy option to replace the glass with the new one. Because if you go back to the ethics of conservation it is that if is possible to repair when do that, it is possible to consolidated it then do not disturb. So, the consolidation was done. So, the multi cracked pieces now, or in a Tudor sandwich and then all the panels were reglazed and, then put back into the position.

(Refer Slide Time: 09:42)

The slide features a yellow background with a blue header and footer. The title 'Restoration of the Stained Glass Rose Window' is in bold black text. Below it, the text 'Repair of the multi-cracked glass' is followed by 'Window was put back in place in readiness on 4th November 1988'. The word 'CONSOLIDATION' is written in blue. On the right is a photograph of a stained glass window with intricate designs. The footer contains logos for IIT KHARAGPUR and NPTEL ONLINE CERTIFICATION COURSES, along with a small video inset of a woman.

So, this is after that it has been put back into the position and, the it was put back in place in readiness for 4th November 1988 and nobody I mean (Refer Time: 09:54) Peter Gibson is saying that, if when the visitors come they look up the just see the rose window, but they do not know what is happened the amount of labour, the amount of care and preservation atoms which are happened. And their old recorded their old displayed when one goes to the museum that what is the story behind that.

So, this is in wonderful example and a bidding brave example of consolidation what we have talked when we talked about the divergent approaches of conservation, but you also remember that when the fire took place, it is not only the rose window which got damage that the entire roof collapse, if you remember that the scenario.



So, the roof had to be in this case it was restored or reconstructed new roof came a the people from all over England during the her majesty the queen, also donated the chamber and, with that it took some years to restore the south transept.

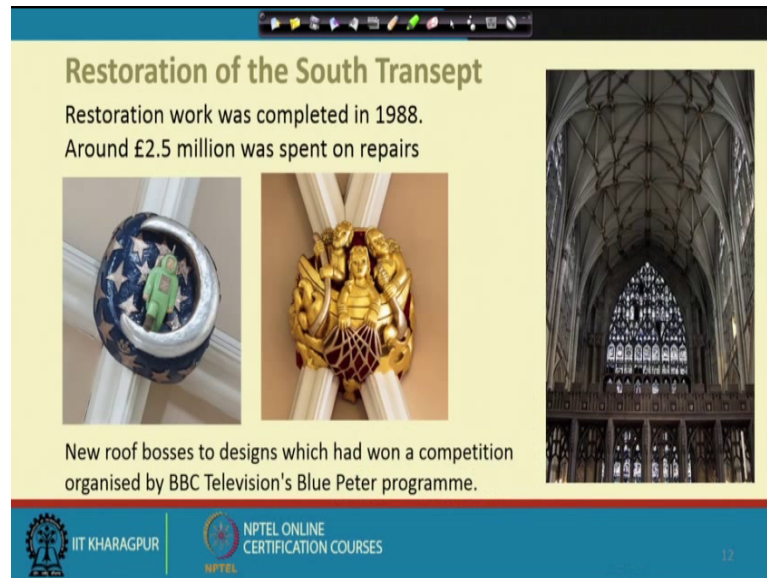
(Refer Slide Time: 11:05)



So, this is the south transept when there you can see the entire roof is as collapse. And this is what it is today entire thing has been restored to with it is full flori with all the decorations and everything.

But there is also interesting story, in when the decoration was happening, you see that there are this bosses the roof bosses which is called a roof bosses that this one, this has to be made the entire roof have to be made according to the original design, but there is something which very interesting thing happened while doing this roof bosses.

(Refer Slide Time: 12:00)



**Restoration of the South Transept**  
Restoration work was completed in 1988.  
Around £2.5 million was spent on repairs

New roof bosses to designs which had won a competition organised by BBC Television's Blue Peter programme.

IIT KHARAGPUR | NPTEL ONLINE CERTIFICATION COURSES | 12

The wanted to include something new and to include the younger generation so, there was a design competition, which was organised by BBC's television blue peter programme, where the design for this bosses or us from many people and specially the children and as you can see a very interesting we cannot change the size, but they can change the designs. So, very interesting design which you can see here is the a man going on to the moon and this was accepted.

Why because from that is at great height you cannot really make out the full design the shape size and the colour and all this thing matters, but you one cannot make out. So, the purpose of that is to involve the future generation, involve the people to incorporate their design. So, in that sense the design is not authentic. And it was new design came up, but keeping the shape size the position and everything held.

And that is all that it sort of continuous and going to the and the when this young children comes, they know that there designs has been there and they will feel that that is my designs, they will grow up they will talk proudly to their grandchildren and children about that how this design competition, this is what is conservation all about it is involving the people, involving the people the future generation the present generation, and so one can question that is not authentic.

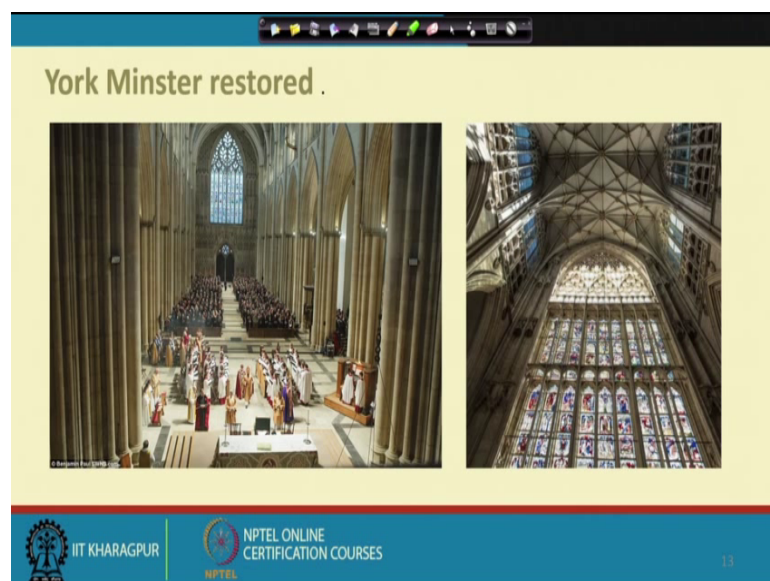
But it does not matter because the entire roof collapse and, it has to be restored, but in that process some creative innovative idea was there, that how to involved and how the

past present and future continuous. And that is why it is a fantastic example of the conservation where the rose window with a lot of difficulty a lot of money lot of patients in a lot of sort of work, man a hours was starting to restore the rose window, the stained glass window to sandwich the fragment is pieces an example of consolidation, where one could have taken a shortcut nobody would have understood.

But that is not the purpose of conservation here, also has the entire roof has been restored it everything and new has been done, because it is the cathedral which is in use. And it is very important as a religious place also and, then how to incorporate the new design into old design and to combine the two and to go and continue the journey for future.

So, York minister and it still continue there lot of it is tradition, a still going on the lot of funds come from the various sources and, it is a matter of proud. So, these are two very important example.

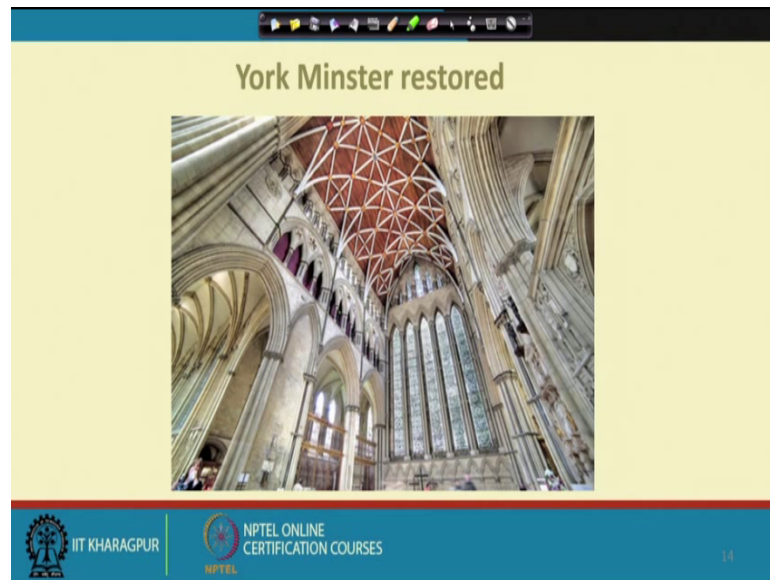
(Refer Slide Time: 15:00)



That how York minister is functioning there at that rose windows is one of the case of restoration of the rose a stain glass, but there are the other stain glasses which have been continuously restored, and to keep it and preserve it in place. And it still continues as a very important tourist place, a religious place, place of pride for not only for the people who are staying in the York, but from all over and people from all over, the world come and visit not only this place.

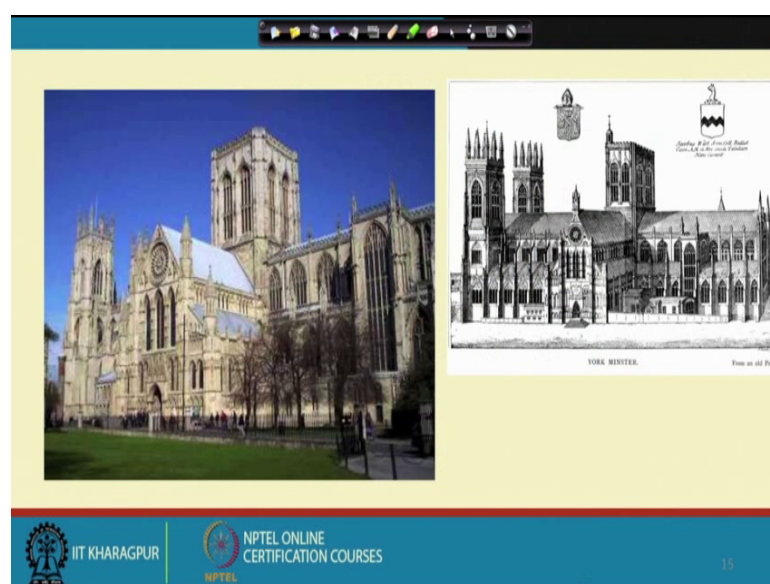
But the undercroft to which is a very interactive museum to understand, what is the history in that layers of history which is stored and which the York minister goes on telling about that.

(Refer Slide Time: 15:47)



And this is what is the also the role of a place, it is taken the new role apart from being just a secret place a cathedral and, this is the two very important instances of York minister restoration.

(Refer Slide Time: 16:05)



Thank you so, but here what you see that there is an old paint of a York minister, but this is also not the old story, it is a new part and, this journey continues.