# Benedict House Access Project (BHAP)

Group 7

EDSGN 100. 13

Spring 2009

**Task:** Design an access path to the Benedict house, in order to provide a safe pathway for easy access. Specifically we are designing a parking lot and a pathway to the Benedict House.


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Figure 1. From left to right: Chris Whitfield, Danny Hoover, Aditya Pisupati, Neil Baranik

**Abstract:** Access to the Benedict House currently does not meet federal and Penn State guidelines. The design solution involves building a parking lot in the lawn between the Benedict House and the building to the east, with two van accessible parking spaces and a 8-foot loading and unloading zone between them. This maximizes the parking area while minimizing the green space taken. The new parking lot will be located to the leftside of the sidewalk in figure 2. The closest tree and red bush will be removed, but green space will be maintained by planting new trees and bushes. Figure 6 shows additional bushes that must be removed.

Figure 2. Benedict House is on the right, and the suggested parking lot will be to the left of this sidewalk.

This is the basic outline of the property

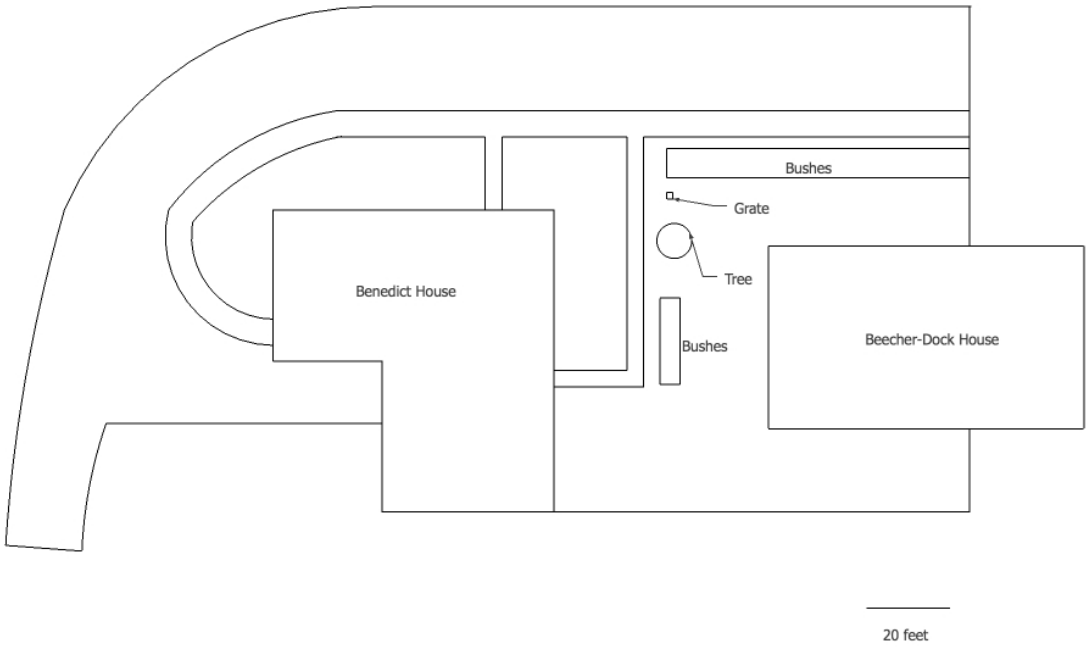


Figure 3. Basic outline of the Benedict House and the surrounding property

## Identifying Customer Needs

Before we started, we decided to find out what users of the Benedict House needed.

- Handicap (Van) accessible Parking Space
- Space close as possible to accessible door
- Distance between parking space and building should be minimized
- Replace grate cover such that holes do not impede mobility
- Leave as much green space as possible
- Sidewalks must be deeper where cars enter parking lot
- Symmetric parking lot that maximized utility
- Turn around area

We made a needs matrix to asses our needs.

| Metric | 8'x20' space | 8'x20' loading zone | East side of building | Smaller holes in grate | Remove dead trees | 6" deep concrete | Two Spaces |
|---|---|---|---|---|---|---|---|
| **Need** | | | | | | | |
| Handicap (Van) Accessible Parking Space | --- | --- | | | | | |
| Space next to accessible door | | | --- | | | | |
| Distance between Parking Space and Building shall be minimized | | | --- | | | | |
| Replace grate cover such that the holes do not impede mobility | | | | --- | | | |
| Leave as much green space as possible | | | | | --- | | |
| Sidewalks must be deeper where cars enter parking lot | | | | | | --- | |
| Symmetric parking lot that maximizes utility | | | | | | | --- |
| Turn around area | | | | | | | --- |

Figure 4. Needs matrix

Next, we did a general outline

## Identifying and Analyzing Customer Statements

- Parking shall be disabled person and/or van accessible and marked as such
- Parking shall be as close to the building as possible
- Parking shall maximize green area
- Parking areas shall be on the east side of the Benedict House

Analyzing the property lead us to our solution

## Possible Solutions

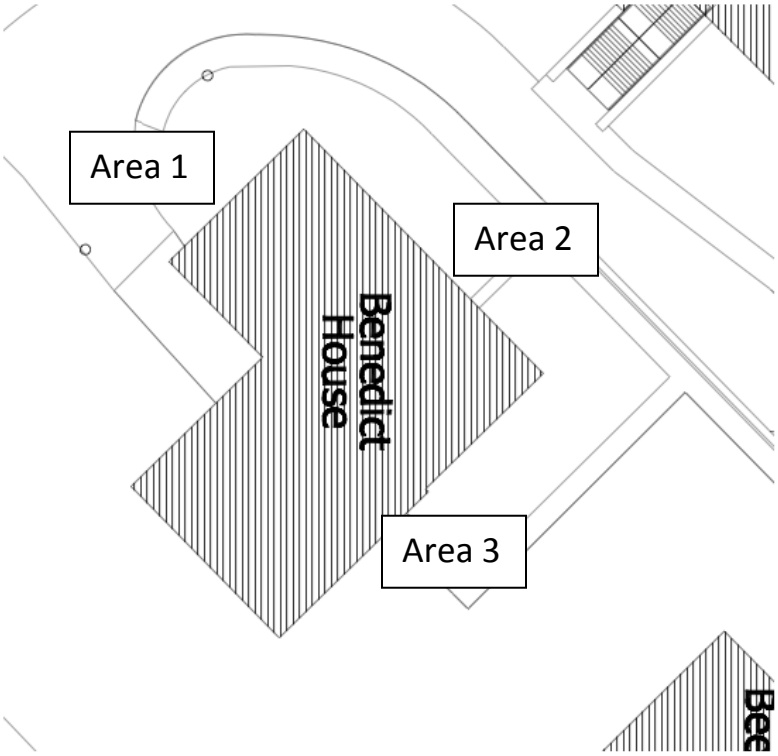


Figure 5. This figure shows the areas our group considered for the final solution

Our group decided that the location of the parking lot must be as close to an existing entryway to the building as possible. As such, we identified three possible areas for placing the handicap accessible parking spaces, since each would be near an entrance to the building. Our group ruled out area 1 since the corresponding entryway is the least handicap accessible. In order to make the entryway for area 1 more accessible, there would need to be a ramp, which would take away from the space necessary for designated handicap parking spaces. Also this entrance is not very accessible because of the stairs just inside the door. Our group ruled out area 2 since the amount of space between the building and the road was significantly less than what is necessary for a handicap accessible parking space and a designated unloading zone.  There is a large tree where the space would be placed, and we are not prepared to remove it. We therefore chose area 3 since it would provide the best compromise between cost effectiveness and access. Area 3 also has its limitations simply because of the way that the Benedict House is constructed. For instance, the entrance corresponding to area 3 requires a ramp for full access (although the ramp would take up less space than that in area 1). Also, a parking lot in area 3 would require removal of bushes and some trees, and would take away from green space more significantly than areas 1 and 2.

## Our Solution

Figure 6. The entrance to the proposed parking lot will go over this sidewalk.  Sidewalk and bushes must be removed.

## Specifications

Research and tape measurements lead to specific details and cost analysis for our proposed plan.

- Two 8’ x 25’ spaces
- One 8’ x 25’ loading area
- Grate cover with <.5’’ diameter holes
- Curb removed to make room for pavement
- Curb 6’’ thick where cars will pass over
- Defunct tree bushes will be taken out
- Additional curb installed
- Truncated domes on sidewalk
- Maximum slop of sidewalk 10%

# Specifications derived from AADAG/ codes

- One  8’ x 25’ Van accessible parking space
- One 8’ x 25’ Loading and unloading area
- Grate cover replacement
- Keep green space ( replace trees)
- Deeper sidewalks (6’’ deep where cars cross over)

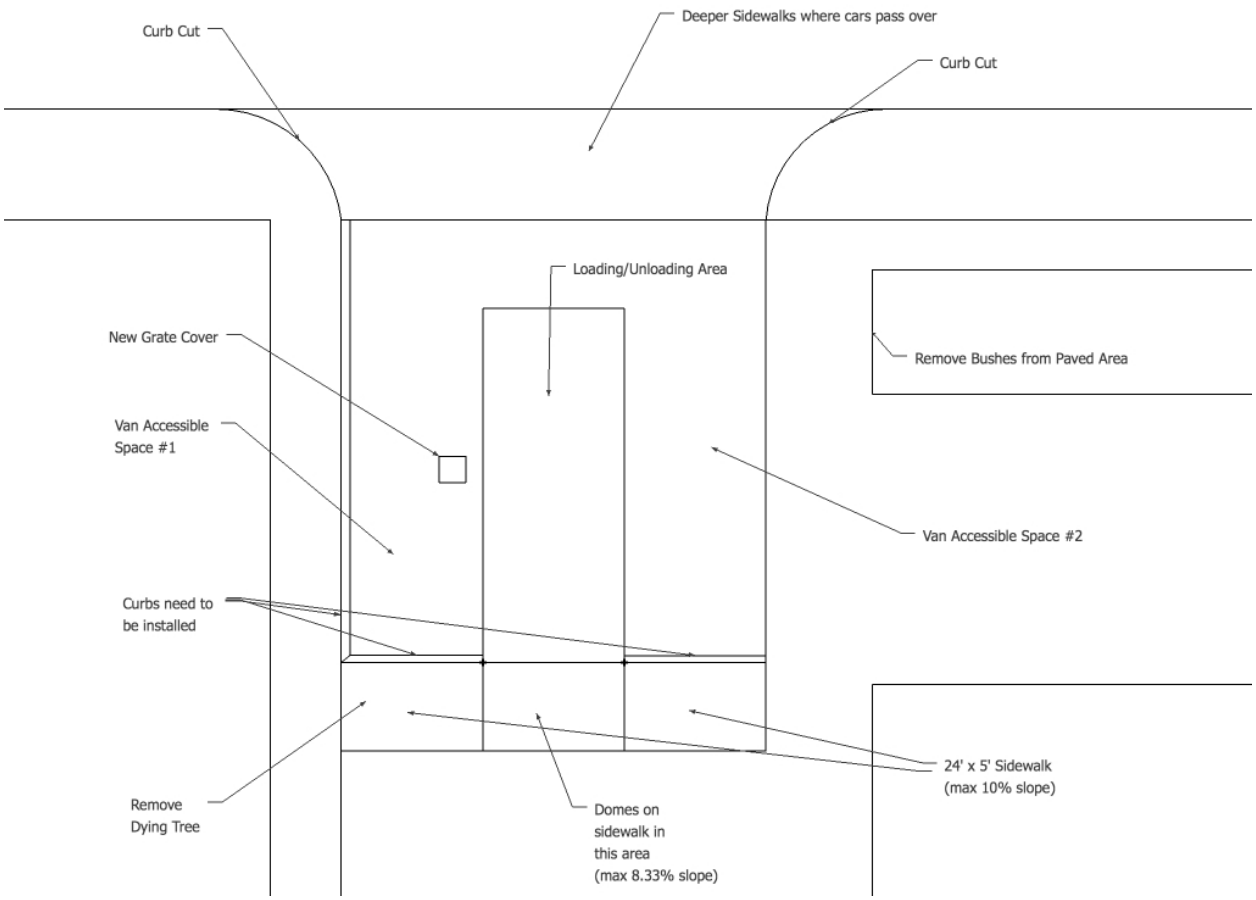


Figure 7. CAD of proposed plan

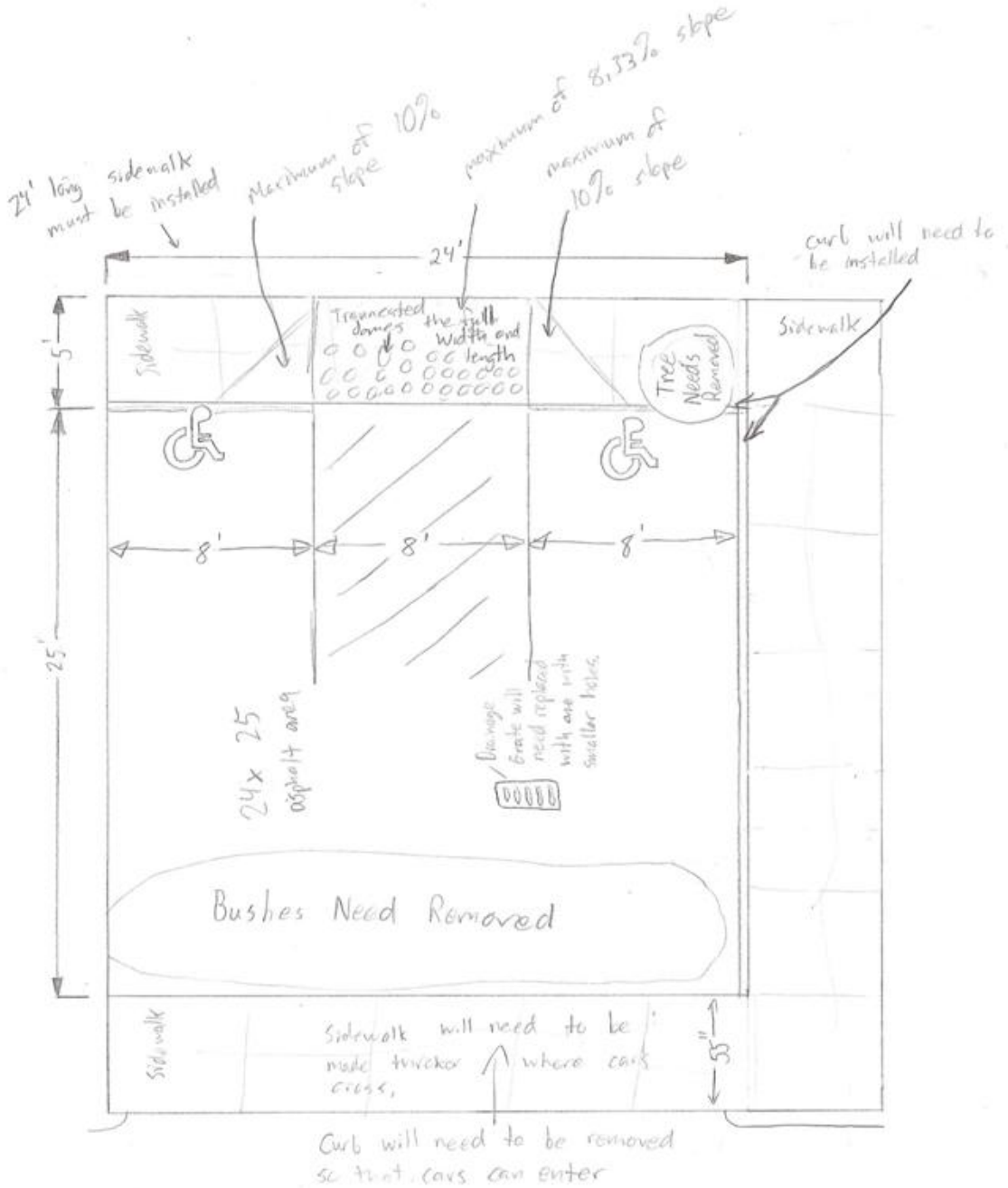


Figure 8. Plans of what must be accomplished

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JOB BENEDICT HOUSE
SHEET NO. _____ OF _____
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____
SCALE _____

| | |
|---|---|
| PREP CREW 8 hrs | $ 1840.00 |
| CONCRETE CREW 20 hrs | $ 4600.00 |
| PAVING CREW 4 hrs | $ 2200.00 |
| 44 TN 2A SUBBASE, f.o.b. JOBSITE | $ 440.00 |
| 22 TN HOT MIX ASPHALT, f.o.b. JOBSITE | $ 1540.00 |
| 5 CY CLASS A PENNDOT CONCRETE, f.o.b. JOBSITE | $ 625.00 |
| MISCELLANEOUS MATERIALS | $ 250.00 |
| PAVEMENT MARKINGS | $ 500.00 |
| MOBILIZATION, LAYOUT, ETC | $ 1500.00 |
| TOTAL COST | $ 13,495.00 |
| OVERHEAD & PROFIT | $ 2,025.00 |
| TOTAL ESTIMATE | $ 15,520.00 |

Figure 9. Cost estimate for entire project.

Figure 9 gives a layout of all the expenses. This includes over $8000 in crew work, $2000 in materials, and $5000 in Misc.

In conclusion to our report and cost analysis, we found the cheapest and best site was area 3 from figure 5. This is on the east side of the Benedict House. Despite this being the cheapest, the job would still cost around $15,000 to accomplish. We are not sure we would recommend Penn State going this route because of the cost. Our final judgment depends upon to what extent Penn State wants to utilize the Benedict House and its surrounding area. If they plan on using this area for years to come, then this will be a great investment. If they plan on tearing it down and moving somewhere else, this will be an expensive investment for the minimal use they would get out of the Benedict House. Also, perhaps Penn State has its' own crew and concrete, which would ultimately decrease the cost we currently have estimated.

# References

Americans with Disabilities Act Associated Guidelines <http://www.ada.gov/>

ANSI A117.1 Sections 502-503. <http://www.iccsafe.org>

Robert Hoover, Clyde Dunlap (costing)