

**Memorandum of Agreement  
Between DHR and JMU  
For a Historical Highway Marker Web Project &  
Data Sharing Service Marker Database  
For the Department of Historic Resources**

**Purpose:**

This document details the technical expectations and components, and work to be completed by JMU to develop DHR's Historical Highway Marker Website Project, and also provides the schedule of payments by DHR to JMU for the same.

**Website Functionality:**

The website will have the following capabilities:

1. A search feature that will allow site visitors to search the marker database in the following ways:
  - a. By marker number
  - b. By text on the marker
  - c. By county/metro area
  - d. Within range of a given zip code
  - e. By date of erection
  - f. By pre-set categories, e.g. Jamestown, Civil War, African-American, etc.
2. Search results will be presented in two ways:
  - a. On a Google Map (high-tech)

The website will make use of the Google Maps API to overlay links to markers on an interactive map of Virginia. Clicking on any of the markers on the map will open up a pop-up informational window with summary information about the marker, and a link to a full-page view of information about this marker. Site visitors will need visual browsers with JavaScript enabled in order to take advantage of this representation of the search results.
  - b. As a plain-text list of links (low-tech)

For visitors without JavaScript enabled, or who have visual or other impairments which make use of the Google Maps interface difficult or impossible, the search results will be displayed as a list of links. If possible to do so while maintaining accessibility, the list will be sortable by fields related to the markers, e.g. by county. Clicking on any of the links will bring up the full-page view of that marker.
3. Individual, full-page entries devoted to each marker which will display:
  - a. The marker's title, text, and year created
  - b. The marker's location, clearly indicated on a current highway map (if possible will use an interactive Google Map)
  - c. A photo of the marker and possibly additional photo(s) as thumbnails that will pop-up or otherwise be displayed full-size if requested by the site visitor.
  - d. Possibly links to other documents associated with the marker or a link to a folder with all associated electronic files such as jpegs, pdfs.
  - e. An icon which will display a "printer friendly" version of the page
4. An administrator's section:

- a. Accessible only by authorized personnel
  - b. The ability to:
    - i. Add a new marker to the database along with photos and other related files
    - ii. Modify the information or files associated with a marker already in the database
    - iii. Completely delete a marker from the database
    - iv. Publish/Unpublish a marker in the database, i.e. keep it in the database but make it unavailable to the public
5. The site will conform to the visual specifications of the current DHR website: <http://www.dhr.virginia.gov>, and will be reached via links added to the current website.

### **Technical Specifications:**

The Marker Website will conform to the following specifications:

#### **1. Web Standards**

HTML code on the page will comply with the W3C's XHTML 1.0 Strict standard. A strict separation between content and presentation will be made. Cascading Style Sheets (CSS) will be used to format the web pages for viewing on a computer screen, and for printing on letter-sized paper. The target website visitor populations will have the following capabilities:

- a. A computer monitor with a resolution of 800x600 pixels or greater
  - b. One of the following web browsers:
    - i. Internet Explorer version 6.0 or higher
    - ii. Firefox version 1.5 or higher (includes Mozilla/Netscape)
    - iii. Safari 2.0 or higher
    - iv. Text-only browsers, e.g. lynx
    - v. Screen-readers, e.g. Jaws
  - c. Javascript enabled for use of advanced features (i.e. Google Maps)
- #### **2. ColdFusion 7**
- The server-side coding language to be employed for this site will be ColdFusion 7. ColdFusion is the preferred technology of Virginia Interactive, the Commonwealth's web hosting provider. At present, the servers where the DHR site is hosted are running ColdFusion version 4.5, an outdated version of the software, but are in the process of upgrading to version 7. It is the understanding of JMU and DHR that Virginia Interactive will have upgraded its software and be able to host the site by the first phased-in launch date of April 1. If not, then DHR will need to make other arrangements for hosting the site since significant changes in the structure of ColdFusion between versions 4.5 and 7 make it impossible to develop a site that will conform to both.
- #### **3. Oracle 9i**
- The website marker data will be migrated into the DHR's Data Sharing Service (DSS) Oracle database. This database will be used as the back end data provider to the public website. Doing this will obviate the necessity of maintaining two separate databases with duplicate information on the historical markers. Appropriate measures will be taken to ensure that the public website in no way allows access by the general public to the protected areas of the DSS database.
- #### **4. Section 508 guidelines**
- The website will conform to the Section 508 guidelines for website accessibility.

**Project Tasks/Phases:**

ID	Nov 2006				Dec 2006				Jan 2007				Feb 2007				Mar 2007				Apr 2007	
	11/5	11/12	11/19	11/26	12/3	12/10	12/17	12/24	12/31	1/7	1/14	1/21	1/28	2/4	2/11	2/18	2/25	3/4	3/11	3/18	3/25	4/1
1	Interface Design and Storyboarding																					
2	Incorporate marker data into DSS																					
3												Website Coding and Implementation										
4												Usability testing /Section 508 review										
5												Implementation of Revisions										
6												Site Launch										

**Figure 1--Timeline for Historical Marker Website Project**

**1. Interface design and storyboarding**

The first phase of the project will involve the design and mockup of the website interface. The purpose of this phase is to ensure that the design adequately meets the requirements of all stakeholder groups, including DHR and the target site visitor population. A mockup is a visual representation which has little or no working functionality and which may be as simple as hand-drawn sketches, or as advanced as simplified block representations of the website created with PowerPoint. If necessary, the mockup may be accompanied by a narrative description of the elements in the interface. The design should be thorough enough that a non-technical person can confidently say that the functional specifications given above are met or not. The project supervisor at DHR will be asked to signoff on this design once it is completed. Upon signoff, this design will serve as a binding agreement as to the form that the eventual website will take. Modifications requested after signoff will be taken into consideration, but there is no guarantee that these modifications will be able to be implemented by the requested partial site launch date of April 1<sup>st</sup>, 2007. Additional effort required to implement functionality modifications requested after the signoff may incur additional costs. This phase begins upon the signing of the MOA between DHR and JMU, and the target date for signoff on the interface design is Friday, January 5<sup>th</sup>, 2007.

**2. Incorporation of marker data into DSS Oracle database**

This phase of the project will occur concurrently with phase one, and addresses the requests made under Track 2 of the original DSS Project request from DHR. The tables and data entered into the DSS database will be analyzed to ensure that they will meet the needs of the site to be built, and will be modified as necessary to do so. If possible, some tables which currently exist in the Access database (such as county names) provided by DHR may not be transferred to the DSS database as it is anticipated that much of this information will already exist there. This phase will begin when the MOA between DHR and JMU is signed and should be completed by Friday, January 5<sup>th</sup>, 2007.

3. **Website coding and implementation**

This phase will begin upon the completion of Phase 1. Once the design has been completed, it will be possible to move forward with the coding of the website. The site will be built on a password-protected testing server, accessible to members of the project team, and hosted by DHR's hosting provider (vipnet.org) or another host should Virginia Interactive still retain outdated software. Coding and implementation means that a working prototype of all requested features and functionality will be built according to the standards in the technical specifications above. This phase includes alpha testing in the browsers and on the platforms specified in the technical specifications above. Successful completion of this phase will be reached when the DHR Project Supervisor signs off on a checklist indicating that all functional and design specifications have been satisfied. The target completion date for this phase of the project will be Friday, February 16<sup>th</sup>, 2007.

4. **Usability testing and Section 508 compliance review**

The purpose of this phase is to ensure that the intended site visitors will be able to take advantage of all of the functionality that the site has to offer. A sample of approximately five people from the target site visitor population will be recruited and brought to JMU in order to assess their ability to use the website. We will make use of a usability testing laboratory which is currently being built on campus. It may be necessary to augment the laboratory's setup with additional hardware and/or software (in the budget). These people will be recorded while performing representative tasks with the website and interviewed to get their overall impressions of the experience of using the website. Results of the user testing will be compiled into a report which lists and prioritizes changes that should be made to the site to improve the user experience. Some of the changes will likely be "necessary" or "high-priority" while others will be "desired" or "low-priority." The report will include a plan for implementing, at a minimum, the high-priority changes prior to the site launch date of April 1<sup>st</sup>, 2007. The target completion date for the usability and 508 compliance testing is Friday, March 16<sup>th</sup>, 2007.

5. **Implementation of revisions resulting from usability testing**

Assuming that user testing will uncover features on the site that need to be altered or improved, this phase will begin upon the completion of user testing, and will implement at a minimum, all high-priority changes by the launch date of April 1<sup>st</sup>, 2007.

6. **Website Launch**

The target website launch date is April 1<sup>st</sup>, 2007. This is an initial launch of the site to make certain selected markers touching on various themes—e.g. Jamestown, Robert E. Lee, Virginia Indians, and African-American people, places, and events—available to the public. DHR will provide a list of markers to JMU for this initial launch.

7. **Collection/confirmation of marker photos and GPS data**

The database contains some marker data which needs confirmation/updating, and also is missing some site data such as GPS latitude and longitude coordinates. This data will be collected by sending people to those specific sites to gather GPS coordinates, photos, and

any other data necessary to bring the database up to date. Priority will be given to those which need to be available by April 1<sup>st</sup>. Other than these time-sensitive locations, appropriate plans will be made to collect the rest of the data and update the database prior to the expiration of funding on June 30<sup>th</sup>, 2007. The funding necessary to complete this phase of the project will vary depending on the number of markers to be mapped, and their dispersion throughout the state.

8. DHR's schedule of payments for the project will be linked to the five aforementioned completion dates in 2007 (January 5, February 16, March 16, April 1, and June 30), contingent upon approval of the work by DHR for each phase as detailed above. Each payment will be in the amount of one-fifth of the total costs for the project. JMU will invoice DHR for each payment. Payment will be withheld should the work at each successive phase be deemed unacceptable by failing to meet the specifications spelled out in this agreement.

## **TERMS AND CONDITIONS**

1. A separate invoice for this purchase order shall be rendered immediately following the schedule set forth in this agreement. All copies shall be forwarded direct to the agency at the following address:  
Department of Historic Resources  
Attention: Accounts Payable  
10 Courthouse Avenue  
Petersburg, VA 23803  
804-862-6416
2. No substitution, change or deviation shall be made without written authority from the Commonwealth by Purchase Order Change.
3. This Purchase Order/Contract shall be governed in all respects, whether as to validity, construction, capacity, performance or otherwise by the laws of the Commonwealth of Virginia.
4. Vendors and contractors performing work on Commonwealth owned or leased facilities or property shall, during the entire term of the contract, maintain at a minimum, the insurance coverages as listed in the *Vendors Manual* and any revisions thereto.

### **JMU Personnel:**

The JMU principal in this project will be Morgan C. Benton, of the Department of Integrated Sciences and Technology at James Madison University.

**Morgan C. Benton** has been a teacher and practitioner in the areas of web application design, web standards, and web interface design and usability, as well as in the area of the ethical and social impacts of computing since 1999. He is the owner of a successful web consulting firm, Morphatic, which provides site design, implementation, and hosting services to small businesses and individual clients. He has been intimately involved in the design and implementation of a number of websites notably the New Jersey Institute of Technology's Information Systems Department home page, and the website of Beacon Reverse, a reverse mortgage company in Northern Virginia. The strength of Morgan's practice is his focus on clean, usable websites that conform to the most current and forward-looking web standards.

In addition to Dr. Benton, it is anticipated that a number of JMU students will be hired to help in the completion of this project. Students may be used to perform coding, testing, and data collection, and their work will be overseen by the principals.

**DHR Project Manager will be Randall Jones.**

**Budget:**

A detailed breakdown of the budget for this project is contained in the attached spreadsheet. The personnel time to accomplish the tasks described above is estimated at 1.5 work-months for Dr. Benton. The budget also includes an allowance to hire four students part-time. Student involvement will begin during the coding phase of the project (January) and continue through the end of the spring semester (approximately 12 weeks). Travel money is allocated for when students are sent to collect the missing GPS/photographic data. There is a line item for two GPS units and two digital cameras that would be used for this data collection. The purchase of a Macintosh laptop computer is needed for cross-platform usability and browser-compatibility testing. The software allocation is for software for this computer. Usability testing will take place in a usability laboratory that is run by CISAT's LabOps group at JMU and this expense is covered by JMU. The line item for technical support covers the time of the tech support professionals who will be involved in setting up and maintaining this lab. Equipment purchased for this project will be retained by JMU, with the exception of one camera and one GPS unit which will be the property of DHR.