Walking Routes to School Program

Creating Walking Routes to School using the Network Analyst Extension

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Purpose of Program

- Create a WEB-based printable map for the public.

- Offer a web based interactive mapping tool
  - It would allow parents to visually see a walking route from their home to a proposed Elementary School.
  - Have the feel of other internet mapping utilities offered by the City of Henderson.

- GPS traffic infrastructure for Asset Management

- Prepare Work Orders for failing infrastructure within City Limits
Purpose of Program cont.

- Why is the City of Henderson doing this?
  - August 2005 President signed the: Safe, Accountable, Flexible Efficient Transportation Equity Act - A Legacy for Users
  - As part of the bill 612 Million was earmarked for establishing SAFE ROUTES to school programs for K-8 schools in every state.
  - Safe Routes to School program empower communities to make walking and bicycling to schools an attractive, routine and safe activity thereby building life-long habits of walking and bicycling.
  - The City of Henderson is ensuring these Safe Route Programs are possible by making sure that Walking and Bicycling Paths to school are safe and available to the public.
Creating the Database

- Database Design
  - Created a File Based Geodatabase using ArcCatalog 9.2
  - Created Feature Datasets
    - Paths, Signals, Signs, Streetlight Poles, Work Orders
    - PATHS (Backbone of the Network)
      - Concrete Sidewalk
      - Asphalt
      - Crosswalks
      - Dirt Paths
      - No Paths (Hazard Walking Zone)
      - Private Sidewalk
      - Unmarked Crosswalk at Stop Signs
      - Unmarked Crosswalks at Yield Signs
Creating the Database cont.

- Network Design for our Walking Route Program
  - Network Dataset was the way to go!!
  - We didn’t need to show direction of flow so the Geometric Network was out of the question.

- Technical Difficulties
  - With Network Datasets you cannot have complex edges
    - Meaning you can’t have the end of a line connect to another line unless it’s at an end point.
    - So, we had to ensure that all connections were made at endpoints.
    - Drawback: TIME CONSUMING
  - ESRI stated that a process could be developed by a programmer to run a script that would break all complex edges and create end-point connectivity between all lines. (We have yet to do this)
File Geodatabase Structure
Developing Our Map

- Wanted to be similar to what is already out there
  - Didn’t want to redevelop the wheel

- We researched not only local but national Safe Route / Walking Route maps.

- We decided that we wanted to show Hazard Zones
  - Areas where Children can or cannot walk safely according to the Clark County School District

- We were also going to show walking path types
  - Sidewalk, Asphalt, Dirt, No-Path (we’ll explain later), Private Sidewalk

- We also wanted to show Traffic / School signs
Other Entity Mapping Examples

City of Las Vegas Map
Other Entity Mapping Examples

Clark County Map
Other Entity Mapping Examples

City of North Las Vegas Map
City Of Henderson’s Printable Map
The locations of adult school crossing guards are determined by the Henderson Police Department based on traffic conditions (phone number 702-267-4550).

**LEGEND**

- Traffic Signal
- Stop Sign
- Yield Sign
- School Crossing Sign
- Advance School Zone Sign
- School Location
- End School Zone
- SAFE Walking Zone
- HAZARD Walking Zone
- Crosswalk
- Sidewalk Path
- Dirt Path
- Asphalt Path
- Speed Limit 25
- Speed Limit 30
- Speed Limit 35
- Speed Limit 40
- Speed Limit 45
- Speed Limit 55
- School Zone Flasher (15 MPH when flashing)
- School Crossing Zone Flasher (25 MPH when flashing)
- 15 MPH School Zone
- 25 MPH School Crossing Zone
- Crossing Guard Location
- Private Subdivision
- NO Path
Proposed Online Map

- Wanted to be similar to what is already out there
This would be the outcome of the user input.

ArcIMS Application that would prompt for user address and then allow user to pick an Elementary School from a drop down list. Hence, limiting the use of the application to only finding routes to schools.
Proposed Online Map cont.
Underlying Network of Map

- Underlying Walking Path Network
  - Green – Sidewalk
  - Red/White – Private Neighborhood (Uncontrolled)
  - Purple – Unmarked Crosswalk (Stop)
  - Violet – Unmarked Crosswalk (Yield)
  - White/Black – Marked Crosswalk
Initial Thought was to provide walking directions such as those listed below.

We also were developing the Network taking walking SPEEDS into consideration.
- This was also stopped due to the liability issues of showing the directions.

City of Henderson Attorneys denied the request.
- Liability is too high in showing actual directions.
Walking Distance Issues

- Clark County School District (CCSD) (transportation.ccsd.net)
  - “Transportation is available for students residing two miles or more from their zoned school as stated in Clark County School District Regulation 3531, Student Transportation Guidelines”.

![Image of a map with marked distances to a school]
The “New Service Area” tool allows us to review areas outside of the two mile walking zone to analyze possible new crosswalk locations.
Conclusion

- Still Very Early in our Program
- 15 Schools now GPS
- Signs GPS
  - 4158 Regulatory Signs
  - 752 School Signs
  - Total of 4910 signs GPS with Northing and Easting points stored in our File Geodatabase
- Walking Paths Digitized
  
<table>
<thead>
<tr>
<th>Type</th>
<th>Distance</th>
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<tbody>
<tr>
<td>Sidewalk</td>
<td>390.9</td>
</tr>
<tr>
<td>Private Sidewalk</td>
<td>40.8</td>
</tr>
<tr>
<td>Dirt Paths</td>
<td>113.1</td>
</tr>
<tr>
<td>Asphalt Paths</td>
<td>18</td>
</tr>
<tr>
<td>No Path</td>
<td>45.7</td>
</tr>
</tbody>
</table>
  | TOTAL           | 608.5    | Miles
Conclusion cont.

- **WEBSITES:**
  - [http://lookoutkidsabout.org/](http://lookoutkidsabout.org/)
  - [http://www.walknevada.com/](http://www.walknevada.com/)
  - [http://www.saferoutesinfo.org/](http://www.saferoutesinfo.org/)
  - [http://www.walktoschool.org/](http://www.walktoschool.org/)
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