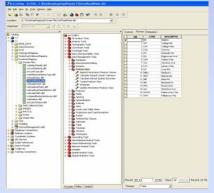
## Roadway Mapping Project for UNH Facilities Information Technology

#### FIGURE 2. Roadway Attribute Table

EACTE!	SHAPE*	fmillion	Material	Realitates	Clean	Danuer ship	Lessenskinsteres	SHAPE_Length	SHAPE Ares
- 3	Polygon	-01.61	Ferenet	Mair Street	Arberse	IN	Curtien	8929 547947	100001 34030
3	Polygian	46.81	Pareners	College Fixed	Arberne	1381	(Joversky of New Yorkstone (LERI)	1179.042333	17421.52311
- 5	Putygon	-04.6-	Personal	Michigan Dr.	Arterial	UNI	Linke sty of New Hempotes (L981)	6932.675267	73630 01110
	Polygon	44.61	Personal	Denerit Circle	Corrector	UNI	(Javarsky of New Hampsham (LER)	3000 226437	34345.70007
,	Potogon	of 6.8%	Perenant	YMMeteor: Year	Connector	1,941	(Joversty of New Hampules (JAN)	933 420000	13034 71183
	Potigon .	48.81	Personet	indianeon may	Corrector	184	(Javarsky of New Hampohies (JAR)	530,745301	7539-85640
	Polygon	vitado.	Perenert	Michael Way	Corrector	1,841	University of New Hampohee (UPA1)	931 579430	10343-05399
- 11	Potrgen	vitagio.	Ference	College Fload	Arterial	UNIT	Concepts of New Hampston (UMA)	3137334603	46014 23965
12	Putigen	46.81	Personal	Guard Way	Connector	LPR1	(Joversty of New Hampshee (JAH)	2217 606460	21503 91510
14	Potrgon	14.61	Perend	Qualifility	Cornedor	Liter	Little sty of New Harquist (JAH)	466 503666	4271 31200
16	Polygon	19.61	Pereneri	Guad Way	Corrector	1,891	University of New Hampohine (LRM)	962 505192	9058-32010
19	Polygon	old, do	Ferenant	Police Brook Lane	Cornector	LPR1	Duften	909 565306	12204 81454
21	Polygon	18.61	Feet A	Litrary Viscy	Diseasofiaeca	IM	Durhan	1009.799177	7843 53145
22	Polygon	198.81	Pareners	Thompson Hell Way	(Newsyllance)	1984	(Jones by of New Hampston (JAH)	888.017063	6545,30049
25	Potogon	el kales	Ferenet	Edgewood (rive	Carrecto	(N	Durine	874 139792	12982 05853
24	Potrgen	office.	Ferenet	Sharbard Ave	Corrector	Urbranen	Linversity of New Hampures (LRM)	1634 542458	30007 44361
26	Putgen	-04.81	Parentel	MA BY YVEY	Crispony/fumisi	Liter	Linkersky of New Hampston (LRR)	1341.086532	15595-99143
25	Polygon	44.61	Personal	MARITY ONLY	Criseway/Special	HAL	(Joversky of New Hampuhins (JAM)	606.076967	7214 63033
28	Polygon	49.61	Pereneral	Ricenary Ave	Corrector	EM .	Durhan	525.504541	2674-65500
29	Polygon	olide.	Ferencet	Darrison Ave	Corrector	EN	Durhan	3879.073467	67063 67792
30	Polygon	elkde.	Ferenet	Baked Seed	(Newsyflyeise	1881	(Joversty of New Hampston (JAR)	772 KONEON	8887 41243
31	Polygon	-04.61	Personal	German Ave	Convention	DM	Durken	79.044111	52 67477
32	Pubgon	dide	Personal	Depti Ford	Crimeray/Species	(Hérieren	Literary of time Hampelier (LBB1)	2224 638084	2010014303
23	Putrget	-04.do	Personal	Lose Rd	Corrector	1,941	Charles sign of time Hampshare (LBBH)	Ptr 949000	9457.75757
34	Potogon	-DLA-	Perenet	Lead Lave	(rivery Coscie	1,941	University of New Hampshire (URA)	341 891155	3061.33021
35	Potigon	194.61	Ferenet	West Ease Drive	(storow/special	(80)	Chiversity of New Hampshire (1991)	1130.040306	1743074256
	Polygon	-04,6+	Perentet	Mary Street	Arteria	EM	Dates	8879.191421	140169 (1633
36	Putigon	-94,6+	Personnel	Man Street	Arterial	N .	Dahah	1237 000439	(888) 4)))4
81	Poligen	dide	Persons	Mar Street	Arterial	(M	Outrain	149,767467	42 95034
- 63	Polygon	distri	Payment	Map Street	Arterial	Car	Surian	3237 329014	56906-17369

The attribute table for roadway areas shows how we chose to define each area using attributes such as road name, road ownership, seasonal maintenance and classes. Figure 2 also shows total areas and lengths for each road.

#### **FIGURE 3. Geodatabase Construction**



ArcCatalog was used to create a feature library. Additionally a data dictionary was created for each roadway feature and entered into the geodatabase.

#### FIGURE 4. Curb Areas



This map shows the curb areas mapped across campus. Note that many areas do not have curbs and are not mapped. Seth Prouty & Jeremy Onysko Geography Department University of New Hampshire, Durham, NH

#### INTRODUCTION:

RESULTS:

this project thus far:

In the spring of 2006, the University of New Hampshire Facilities Information Technology (IT) department was presented with the task of creating a geographic information system (GIS) for the university campus. This project would include creating a detailed geodatabase of roadways, parking lots, and pedestrian walkways. To assist in the creation of a campus GIS, six undergraduate students were selected for the positions of initial data acquisition and post-processing. Seth Prouty and Jeremy Onysko requested and were chosen to assist in the planning and development of a roadway geodatabase.

#### **METHODS:**

The roadway geodatabase was constructed within ArcCatalog. An exhaustive feature library and data dictionary were created for each roadway feature. Features such as roadway paint markings, speed reduction devices, roadway centerlines, etc were used (see Figure 3). The data dictionary and feature library were incorporated into a Trimble RTK unit (see Photos 1 and 2). This unit was used for the collection of roadway area and curb area points. Utilizing Bluetooth technology, the RTK unit was continuously geocorrected from a base station located near Leavitt Lane; sub-centimeter position accuracies were thus possible. Much field work was involved in creating the geodatabase. Data points were recorded with the RTK unit and then uploaded to the computer using Trimble Geomatics Office for roadway edges and curb edges first. Shapefiles were created from the acquired points and from these; polygons were generated using the trace tool and snap-to feature. These polygons were representative of total roadway area and curb area.

#### **CONCLUSIONS / DISCUSSION:**

The roadway geodatabase was created to fulfill the need for more precise and accurate methods of managing roadway infrastructure. Although still incomplete, our work this semester will act as the building block for future development of the overall campus GIS.

While the project overall went fairly smoothly, some issues needed to be addressed. Certain areas on campus had particular issues with higher than acceptable PDOP ranges and thus accuracies had to be noted when taking points. Other areas encountered had unique materials that needed to be noted and consequently entered into the data dictionary (see Figure 5). Fortunately, much planning had gone into the initial setup of the data dictionary as well as the geodatabase itself and therefore these issues were accounted for.

### and maintenance attributes recorded (see Figure 2). FIGURE 1- Roadway Mapping Geodatabase

The roadway geodatabase created this semester is part of a larger

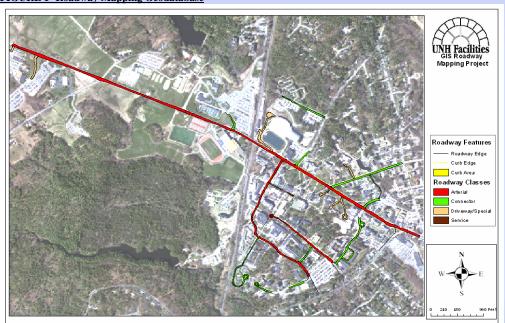
campus GIS project. Although not entirely complete, much work

was required to initially develop the geodatabase. The results of

-Development of a roadway geodatabase, including

-Roadway (see Figure 6) and curb (see Figure 4) polygons for much of campus with road class, ownership, materials,

feature library and data dictionary.



During the Spring of 2006 UNH Facilities GIS Division was tasked with creating a Roadway Geodatabase to aid in roadway infrastructure management and to complement the RSMS programs for roadway management on the UNH campus.

# University of New Hampshine Facilities Information Technology (2020) Seth Proug, 103 Intern Jerny Copyle, Gill Intern For quasitons or comments: (603) 852-9218

#### РНОТО 1



Jeremy and Seth using the RTK unit to collect GPS points. These points were later uploaded to Trimble Geomatics Office where it was converted for use in ArcMap.

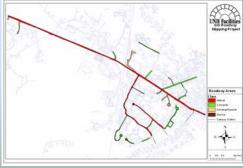
#### Figure 5. Potential Post-Processing Issues



(A) Traffic circles were a common situation on campus which required some careful consideration during post processing. Additional roadway and curb lines were developed to complete polygon features.

Unique materials that needed to be accounted for in the data: (B) Metal flashing on curb edge, (C) Paving blocks on Library Way, (D) Fieldstone curbing, and (E) Accessibility ramps.

#### FIGURE 6. Roadway Areas



All roadways are classified and selecting a polygon will open the attribute table (see Figure 2).