

NAU Facilities: New Addressing Proposal

The NAU Facility Services Department is responsible for the building address assignment and postal service notification for all campus facilities.

NAU-Emergency Management has brought to our attention the fact that some of our current building addresses don't conform to either the Coconino County or City of Flagstaff addressing standards. This is a concern for emergency responders when matching location based data received from callers and dispatching matching data via established georeferenced maps of campus, also known as Geocoding.

Geocoding is the process of transforming a description of a location such as an address, a pair of coordinates or a name of a place to a spatial location on the earth's surface. Coconino County and the City of Flagstaff use the same geocoding software (which is developed by ESRI) that our GIS Group uses for other campus and facility related services. The 911 dispatch system utilizes street ranges and segments to pinpoint the location of a request and assigns an emergency call to the best medical, fire, or police responder. Street ranges refer to the numeric sequence of addresses present on either side of the street, along its segment length, in a systematic directional increase. But in order for a building address to be found and located by their system the address assignment must match the street range. If a building address is not within a specified street range limit or violates one of the established address assignment rules, then system will not accurately find the emergency location.

Representatives from both the county and the city mention that their 911 dispatch would like to see some addressing consistency on the NAU campus. The county GIS department would prefer to see NAU use the City of Flagstaff addressing standards given that NAU is located within the city's jurisdiction.

Adhering to an established addressing standard is critical for an effective geocoded system. The accuracy of a geocode is only as good as the address assignment protocol that we establish. Thus it is essential to ensure that underlying address data is of the highest quality before assigning addresses/geocodes. Best practices in ensuring that underlying data can be used efficiently and with confidence starts with a process called Global Address Verification.

The accuracy of the geocode is totally reliant on the standardization of the underlying addressing data. Verifying and validating the underlying address is just the first step in ensuring the best insights via geocoding. The next step is to match that address with accurate latitude and longitudinal coordinates. To do this, the address is matched to one or more datasets. Again, the accuracy of the geocode is reliant on the accuracy of the underlying data. "Cascading match logic" is used to provide the greatest number of matches—and the highest accuracy available for matches made. Then finally the addresses are matched against multiple conflated datasets, starting with the most accurate first. Thus addresses are matched to the following datasets if available to pin point a location.

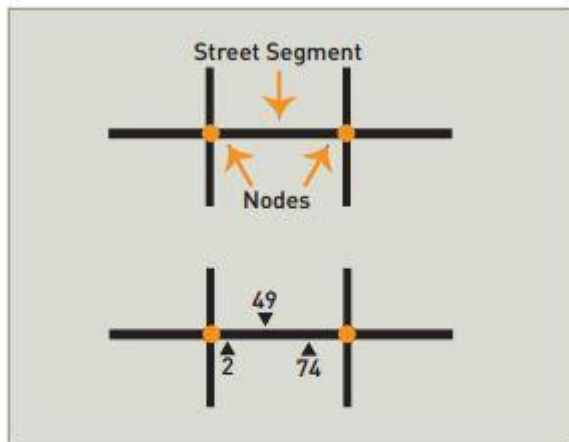
- Address Point
- Street Address Interpolated
- Street Centroid

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- Postal Code Centroid or City Centroid

Address point is the most accurate. It is precise to the parcel level and is rapidly becoming the new standard for quality geocoding. The first pass looks for this level of matches. A second and third pass takes addresses that weren't matched at the point level and looks for street level matches comprised of centroid and/or interpolated data. Addresses that are still unmatched are then run against postal or city centroid data. In this way, each match is made based on the best available data for that address.

Reverse geocoding grabs a mobile GPS signal from a customer's smartphone, pinpoints where he or she is and translates the coordinates to an address. Because reverse geocoding provides an actual address rather than just a point on a map, it also benefits 911 responders and law enforcement by enabling more precise logistical routing information.



Interpolation uses a sub-segment of a given street and places addresses proportionally along the sub-segment, offering even more precision than street-centroid data.



The City of Flagstaff has an established addressing system and assignment protocol which is summarized as follows:

The City of Flagstaff engineering department is responsible for assignment of addresses and for changing any conflict in an existing address or street name.

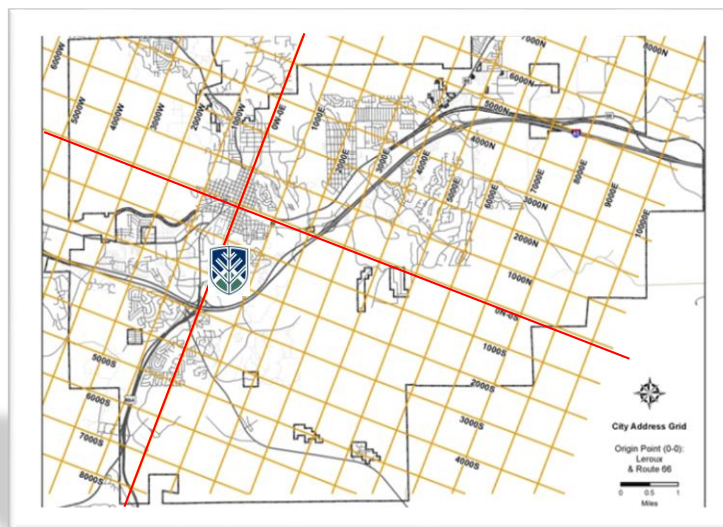
1. Address numbers and street directions are based on a numeric grid that covers the City of Flagstaff and surrounding areas.
2. Odd and even numbers are based on which side of a street the address faces.
3. Suite/unit numbers must be numbers; letters are not permitted, nor are "½" addresses.
4. Addresses must meet emergency response requirements.

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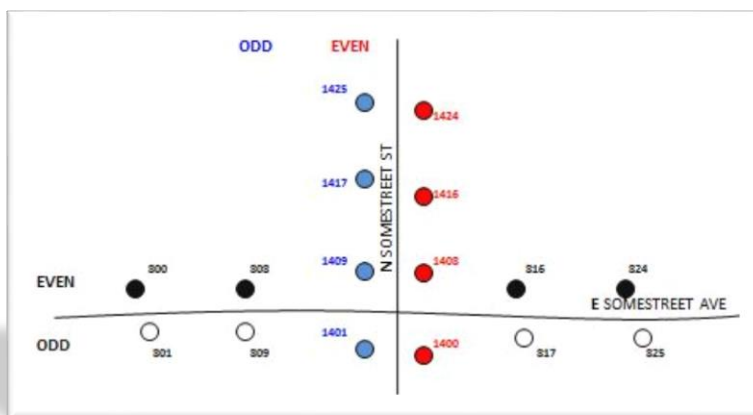
Emergency response for the City of Flagstaff is provided by the Flagstaff Police / Coconino County Sheriff's Office dispatch center. The dispatch system is regulated by the Arizona 911 Program, and data used in the emergency response system must meet State of Arizona standards.

1. The 911 dispatch system operates using street ranges to identify the location of a response, and assigns an emergency call to the correct medical, fire, or police responder.
2. In order for an address to be located by the system, the address must match the street range. If a building number is out of range, the system cannot find it.
3. Street segments are defined as the length of a street between intersections.
4. The range of a street segment refers to the numeric sequence of addresses present on either side of the street, along its length, in the direction of increase.
5. Street ranges may not overlap.
6. The direction of a street segment must follow real-world ranges.

Address ranges are based on the city address grid, which extends out into the County



Odd/even house numbers are based on the side and directionality of the street.



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Below is the proposed list of buildings that will be affected by the NAU address update. The building list is organized (colored coded) by the addressing violation category, as established by the City of Flagstaff address standards. This list denotes the current addresses and proposed new addresses for the NAU facilities that will be affected by this update. Also attached is a corresponding campus reference map that identifies the same addressing violations and the current and proposed address changes. The buildings are highlighted by the various violation category colors (see map legend) and flagged to show the proposed new addresses for those facilities affected.

NOTE: Separate copies of the list and/or map can be made available upon request.

Proposed NAU facility address update list

Building Address Violation Condition and the Current vs Proposed Address Numbers					
Bldg No.	Building Name	Current Address	Violation	Proposed Address	Updated
3A	Prochnow Auditorium	326 W Dupont Ave	Odd/Even Rule Violation	317 W Dupont Ave	
16A	Extended Learning	700 S Osborne Dr	Odd/Even Rule Violation	701 S Osborne Dr	*
36	Science and Health	715 S Osborne Dr	Odd/Even Rule Violation	700 S Osborne Dr	
24	North Heating & Cooling Plant	801 S Osborne Dr	Odd/Even Rule Violation	800 S Osborne Dr	
22	Petersen	800 S Beaver St	Odd/Even Rule Violation	805 S Beaver St	
26	Adel Mathematics	804 S Osborne Dr	Odd/Even Rule Violation	801 S Osborne Dr	
81	WA Franke COB	20 W McConnell Dr	Odd/Even Rule Violation	101 E McConnell Dr	
75	The Suites	300 E McConnell Dr	Odd/Even Rule Violation	305 E McConnell Dr	
95	Pine Ridge Village	400 E McConnell Dr	Odd/Even Rule Violation	400 E Pine Knoll Dr	
98A	Police Department	550 E Pine Knoll Dr	Odd/Even Rule Violation	525 E Pine Knoll Dr	
98C	Engineering Research	560 E Pine Knoll Dr	Odd/Even Rule Violation	535 E Pine Knoll Dr	
77	Facility Services	530 E Pine Knoll Dr	Odd/Even Rule Violation	501 E Pine Knoll Dr	
77A	Facility Services Annex	530 E Pine Knoll Dr	Odd/Even Rule Violation	505 E Pine Knoll Dr	
14	Native American Cultural Center	318 W McCreary	Intersection Rule Violation	810 S Knoles Dr	
50	Campus Heights Apartments	19 W University Dr	Intersection Rule Violation	1400 S Knoles Dr	
91	Centennial/Parking Services	113 W Dupont Ave	Intersection Rule Violation	411 S Beaver St	
4	Morton Hall	224 W McMullen Circle	Out of Sequential Order	217 W Dupont Ave	*
9	Taylor Hall	225 W McMullen Circle	Out of Sequential Order	614 S Knoles Dr	*
10	Old Main	321 W McMullen Circle	Out of Sequential Order	620 S Knoles Dr	*
13	Geology Annex	625 S Knoles Dr	Out of Sequential Order	675 S Knoles Dr	*
13A	Roseberry Apartments	601 S Riordan Ranch Rd	Out of Sequential Order	695 S Knoles Dr	*
16	Communications	307 W Tormey Dr	Out of Sequential Order	700 S Knoles Dr	*
28	Cline Library	925 S Knoles Dr	Out of Sequential Order	1001 S Knoles Dr	
21B	Biological Sciences Annex	815 S Beaver St	Out of Sequential Order	715 S Beaver St	
56	Applied Research & Development	1297 S Knoles Dr	Out of Sequential Order	1395 S Knoles Dr	
6	Campbell Hall	419 S Humphreys St	Refers to Removed Road	207 W Dupont	*
8	Bury	217 W Beckwith Way	Refers to Removed Road	610 S Knoles Dr	*
17	Science Lab Facility	200 W Beckwith Way	Refers to Removed Road	600 S Knoles Dr	*
18	Liberal Arts	700 S Humphreys Circle	Refers to Removed Road	705 S Beaver St	
19	Physical Sciences	602 S Humphreys Circle	Refers to Removed Road	527 S Beaver St	
20	Chemistry	115 W Ellery Ave	Refers to Removed Road	525 S Beaver St	
23	Babbitt Academic Annex	800 S Humphreys St	Refers to Removed Road	803 S Beaver St	
23A	Education Annex	800 S Humphreys St	Refers to Removed Road	801 S Beaver St	
31	Gillenwater Hall	101 W McCreary Dr	Refers to Removed Road	905 S Beaver St	
39	Raymond Hall	100 W Blume Dr	Refers to Removed Road	1075 S Beaver St	
40	McDonald Hall	16 W Blume Dr	Refers to Removed Road	1055 S Beaver St	
NEW Building Addresses					
7A	Beaver House	423 S Beaver St	New Facility to NAU		
36	Science & Health	700 S Osborne Dr	New Facility		
50A	International Pavilion	1450 S. Knoles Dr	New Facility		
60	Student & Academic Services	1100 S Beaver St	New Facility		
86	North Campus Athletic & Recreation Center	821 S San Francisco St	New Facility		
98G	Student Engineering Lab.	575 E Pine Knoll Rd	New Facility		
ADDRESS RULES: SW = ODD South and West Building Location ODD Addresses NE = EVEN North and East Building Location EVEN Addresses N/S 1 At intersection the N/S Road is given address preference					

