

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.

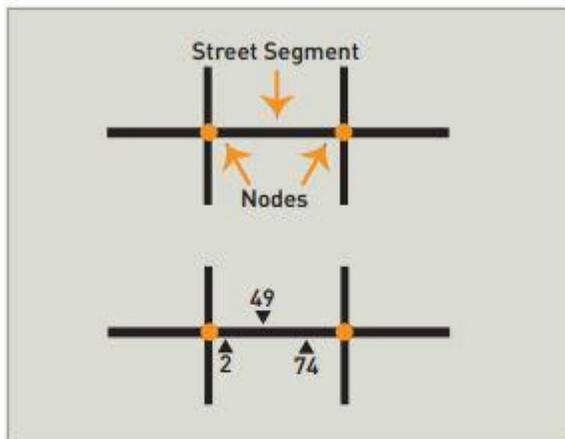
- Address Point
- Street Address Interpolated
- Street Centroid

NAU Facilities: New Addressing Proposal

- 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.

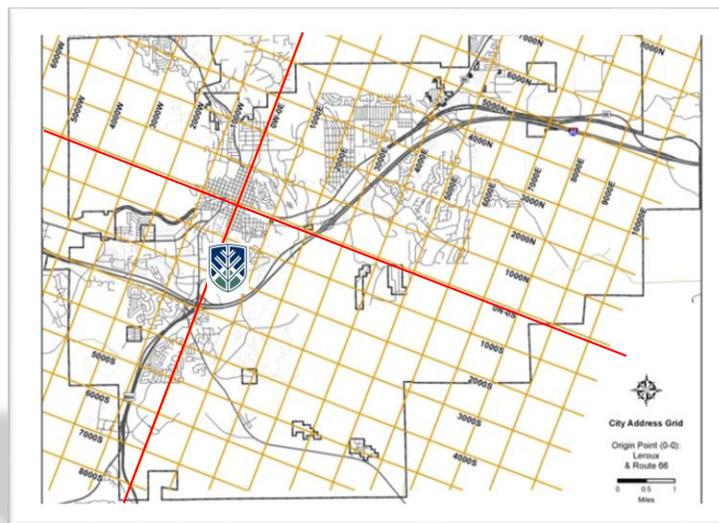
1. Address numbers and street directions are based on a numeric grid that covers the City of Flagstaff and surrounding areas.
2. Odd and even numbers are based on which side of a street the address faces.
3. Suite/unit numbers must be numbers; letters are not permitted, nor are "½" addresses.
4. Addresses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

NAU Facilities: New Addressing Proposal

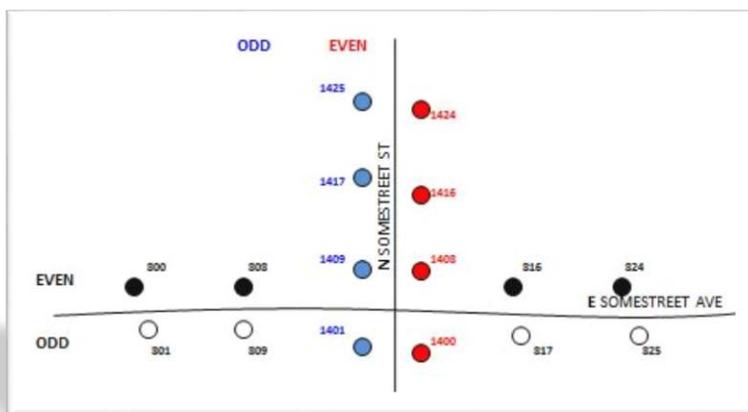
Emergency response for the City of Flagstaff is provided by the Flagstaff Police / Coconino County Sheriff's Office dispatch center. The dispatch system is regulated by the Arizona 911 Program, and data used in the emergency response system must meet State of Arizona standards.

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 | | | | | |

NAU Facilities: New Addressing Proposal

Proposed NAU facility address update map

