

U.S. National Grid Emergency Location Marker (ELM) Installation Planning Considerations

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An ELM project typically involves eight steps. Although local circumstances will drive the exact order and importance of each step, those steps are:

- 1. Build your team
- 2. Tentatively plan your system
- 3. Obtain funding
- 4. Accurately record planned ELM locations
- 5. Order ELMs, info signs and hardware
- 6. Conduct responder and call center training
- 7. Install signs and practice responses
- 8. Publicize effort to ensure public knows how to use the ELM System
- An expanded discussion of each step follows. A video addressing these steps may also be viewed by <u>clicking here</u>.

1. <u>Build your team</u>. Many trail planners fail to appreciate the need for Emergency Services Sector (ESS) personnel to be part of their trail planning team, and unfortunately, end up with a plan which fails to consider the technical realities of dispatch and response. This is particularly true regarding planning for a U.S. National Grid Emergency Location Marker (ELM) installation. In the prefect world every ESS component in a community would already have embraced use of the U.S. National Grid (USNG) – the federal "emergency response language of location" - but regrettably that is not true in most of the United States at this time. Indeed, more than ten years after FEMA issued its directive in 2015 asking the ESS to help them move the nation onto the United States National Grid (USNG) for emergency response situations, too many departments and agencies continue to be off doing their "own thing". Consequently, this first step involves doing personal outreach to community leaders to create buy-in to the idea that there is a better way of doing business and an ELM install is a good way to begin the transition process. Past projects which have been successful have had one thing in common – they created a collaborative developmental process in the very beginning which included to varying degrees the following community principals:

- Emergency Managers,
- Responders (Law, Fire, EMS, SAR),
- The 911 call center (PSAP),
- County/city administration,
- GIS managers and techs,
- Volunteer groups (Boy Scouts, etc.),
- Federal, state, local, tribal and private landowners, and
- Trail user groups.

Although it is hard work to pull together such a diverse group, the end result is worth the effort - lives saved and suffering reduced on your trail system or in your parks.

2. <u>Tentatively plan your system</u>. As the team is forming, a rough plan for installation needs to be developed. This step basically creates the first cost snapshot which is developed through a series of reflective questions. Some of which are:

- Will this be an urban or rural installation?
- What is the length of the trail?
- What type of ELM will be used? (Sign style, vertical, or a mix)
- Do we need to install posts or can preexisting posts be used? (Sign style ELMs are designed to fit onto the bolt holes of standard metal poles; 3x5 stickers are available to modify Carsonite style markers)
- Do we have special circumstances which will drive a higher ELM install rate than past demonstrated averages (see next step below)?
- Will we need any supplemental signage?
- What type of GIS support do we need for this project?
- Will this be a self-managed project, or will we need to hire a contractor?

With answers to the above in mind, experience suggests the initial trail plan can use the following planning factors:

- Urban trail ELM density: one ELM per quarter mile
- Rural trail ELM density: average one ELM per mile however, these installs will not typically land in linear progression like mile markers, but instead be placed at:
 - Trail heads,
 - Road crossings,
 - Known accident locations,
 - Trail junctions,
 - Bridges, and
 - Camping areas or rest stops
- ELM delivered cost planning factors (see endnote for additional informationⁱ):
 - Traditional "sign style" ELM \$30
 - Info signs \$35
 - Carsonite vertical style \$55 (it's an ELM *and* a post)
- Hardware: Hardware costs will be driven by the amount and style of ELMs and their install locations (existing or new post, marine or non-marine environment grade hardware). However, anticipate hardware to run about 10% of overall project ELM costs.
- Posts:
 - Costs are typically project specific style as driven by system standards and regulations for location - metal, wood, other
 - Plan \$60 for each post install (includes labor, doesn't include ELM cost)

With a rough estimate in place, the next step is to determine potential sources of funding.

3. <u>Obtain funding</u>. If the project will not be paid for out of funds already allocated to an organization's trail improvement program, there are a variety of potential funding sources which can be used individually or stitched together to achieve a final funding goal. Some of those sources include:

- Federal and state trail safety/improvement programs,
- Local government grants,
- Community organization and corporate crime fighting/safety grants, and
- Trail user group fund raisers.

However, because of the unique nature of the ELM effort and its tie-in to the USNG federal emergency response geolocation standard – planners should not overlook the potential for funding from locally distributed DHS Homeland Security Grant funding or from professional organizations of the ESS community.

4. <u>Accurately record planned ELM locations</u>. With a rough trail plan in place and funding determined, the next step is to finalize the trail plan by accurately recording locations for ELMs and any supplementary signage. To collect good quality GPS location information:

- Set your GPS readout to USNG (or MGRS), using NAD83 as datum.
- Make sure you have an RMS error of less than 10 meters, preferably 3 meters
- You may need to use GPS averaging (hold at one spot over a minute) to get a good quality location fix.
- If possible, save GPS locations as waypoints in the GPS, or record using other means.
- Transfer the recorded USNG/MGRS geolocations for planned ELMs to the production input spreadsheet.

To download the ELM production input spreadsheet, <u>click here</u>.

5. Order ELMs, info signs and hardware. Manufacture of ELMs is not like calling up a print shop and ordering 50 copies of the same item – like a stop sign. Because USNG coordinates change with each ELM, the manufacturing process dictates that a manufacturer must have significant technical prowess and experience. For this reason, since 2011, USNG Store has worked with a select group of manufacturers to develop ELM production methods and capacity which meet quality standards in a cost-effective manner (see "ELM Service Providers" this website). These manufacturers then make their products available through a USNG Store certified ELM Distributor who understands the nuances of the production process and how to correctly manage an ELM order.

If a project team decides to use an USNG Store certified ELM Distributor to coordinate manufacturing of ELMs for their project, ELM geolocation information as collected and recorded in Step 4 will need to be sent to the distributor for processing. Before those locations are submitted for production, the distributor will send back to the customer PDF, GPX and KML files which the customer can then use to visually confirm the ELMs are being ordered for the desired locations.

For an expanded discussion of the ordering process, please see the <u>Ordering Information page</u> this website.

6. <u>Conduct responder and call center training</u>. Circling back the concept found in step # 1, "Build Your Team," the most critical element of installing an ELM trail system is the training of response personnel. There is no point in putting in the time and effort to install ELMs if the local 9-1-1 call center or ESS community doesn't know what to do with a location as reported using USNG coordinates. Therefore, the mantra before a single ELM goes up on a trail must be – train, train, train. That won't happen if the appropriate ESS and call center personnel weren't onboard with the project at step #1. To help ease the training burden on those team members, the USNG Information Center and USNG Store offer free training materials for download. In addition, many organizations like federally funded Urban Search and Rescue teams who have already made the cut over to USNG may be willing to offer instructor time to help response partners learn the system. Finally, be aware this training effort should not be seen as a substantial hurdle given many responders have already been trained on it through military service, and the original design criteria when USNG was created by the U.S. military in the late 1940's was that it had to be teachable to someone with an 8th grade education in 15 minutes.

7. <u>Install signs and practice responses</u>. Because a trail can cross a variety of federal, state, local, tribal and private lands along even a short stretch of a recreational corridor, sign install regulations can be changing at a rapid pace on that trail. Therefore, it is imperative anyone installing an ELM project be knowledgeable about corridor ownership and respective regulations associated with post and sign placement. It's also critical that the project work crew has enough geospatial awareness that they can be trusted to make sure an ELM sent into the field is placed in its proper USNG coordinate location. And is the norm in the ESS, it's also critical to continue training on the ELM system with mock rescues, greater community exercises, and classroom instruction.

8. <u>Publicize effort to ensure public knows how to use the ELM system</u>. In addition to brochures and informational signs, trail owners should anticipate the need to conduct extensive public outreach in order to effectively engage the trail user community. Experience suggests news organizations find the ELM approach a community newsworthy topic with articles appearing in the press and on TV. YouTube videos and social media postings have also proven effective. And, there may be opportunities to leverage publications and communication channels of trail user groups who came onboard with the effort as part of the team building in step #1.

To download an example brochure which can be edited, click here.

ⁱ Factors impacting final ELM delivered cost are principally customer driven decisions about:

- Volume of ELMs ordered (in one block or under contract). Anticipate:
 - 1st discount breakpoint is typically around 30 ELMs,
 - 2nd discount breakpoint is typically around 100 ELMs
- Size of ELM ordered:
 - 6x9,
 - 9x12,
 - 12x12, or
 - Length of vertical marker
- Type of substrate/style:
 - Aluminum,
 - Aluminum composite (ACM), or
 - Sticker
- Type of laminate used on the ELM or sign:
 - Engineer grade,
 - High Intensity Prismatic, or
 - Diamond Prismatic
- Manufacturer of laminate used
 - 3M,
 - Avery, or
 - Other