Rally Routing 101 – Constraints, Efficiencies, and Contingencies

1. **Introduction** – Coming up with best and most efficient rally route possible is only part of the equation. The question is can *you* successfully run that route in the real world? That is where things generally fall apart. Good routing is a process honed over time. Put to the test *rally after rally*, riders who can consistently plan and execute winning routes will rise as masters of the craft. This instruction is not about that level of expertise. This is the basic stuff; this is routing 101. Ride safe, enjoy, and let the experience of finishing many rallies be your best teacher.

2. **Pre-Rally Chatter or Distributions**

    2.1. Prior Years Rally Packets and Rider Reports
    2.2. Rules & Regulations
    2.3. Tips/FAQs/Hints
    2.4. GPS files
    2.5. Camera Requirements

3. **The Rally Packet**

    3.1. **Read the entire packet! -**The rally packet literally contains free points, or at least point opportunities that would needlessly be left on the table if not read or understood.

Note: In many cases you may be under a time constraint after you receive your rally packet. Avoid the temptation to scan over unfamiliar rules or complicated instructions too quickly just so you can dive into analyzing the bonus options. In many cases your core route may be better constructed through knowledge of the rally requirements, rather than trying to first fully comprehend a plethora of bonus values.

    "The man who does not read… is no better than the man who can't." — Mark Twain

    3.2. Note the **Equipment/Documentation Requirements** (not limited to the following):
        3.2.1. Technical Inspection / Odometer Check
        3.2.2. Fuel Logs or receipts
        3.2.3. Score sheet, time and odometer logging
        3.2.4. Photography settings (resolution, memory size)
        3.2.5. Rally flag (or equivalent)

    3.3. Note **Qualifier/Finisher Requirements** (not limited to the following):
        3.3.1. Distance requirement (SS1K for example)
        3.3.2. Time limit (8-hour, 12-hour, 24-hour)
        3.3.3. Required checkpoints (specific time or window)
        3.3.4. Minimum bonus point accumulation
        3.3.5. Stop requirements (documented breaks)

3.4. Note the **Scoring Structure** (not limited to the following):

    3.4.1. **Straight Scoring** – Add up bonus location valued. No hidden formulas.

    3.4.2. **Combinations** and/or **Multipliers** – When bonus locations must be accomplished in sets or may be subjected to some additional mathematical equations.

    3.4.3. **Restrictions** – Location blackouts (daylight only, low-tide, etc.), specified combination or bonus sequence, access by foot only, etc.

    3.4.4. 'Out of kilter' **Bonus Values** – unusually high or low. These may be 'de facto' constraints (or at least perceived by the bulk of riders as 'de facto' checkpoints). Double check that the low value locations are not part of a more valuable bonus combination.

4. **The Basic Concepts** – "**Constraints, Efficiencies, and Contingencies**"

    4.1. **Constraints** – Route requirements that must be accomplished by you. In the context of rallying a 'constraint' is not a negative word. As far as routing is concerned, constraints remove variables from the routing task and can reduce the number of possible routing iterations.

        4.1.1. **Hard Constraints** – By analyzing the rally requirements, items identified like the starting point/time, required checkpoints/time(s), and finishing point/time. Include an accounting of non-saddle time that will be necessary for each hard constraint (checkpoint requires check-in or test, dismount or purchase for a task).

        4.1.2. **Soft Constraints** – Bonus locations or combinations it appears you will essentially *have* to visit in order to qualify as a finisher (you see no other apparent way to accumulate enough points without these). On the flip-side, it can also be the elimination of a 'sucker bonus' (an enticing bonus, whose acquisition may present a higher risk of failing to finish the rally on time). Include an accounting of non-saddle time that will be necessary for each soft constraint (checkpoint requires check-in or test, purchase or dismount for a task).

"Problems are not stop signs, they are guidelines." – Robert H. Schuller

    4.2. **Efficiencies** – The rating which every bonus value on your route is given, based on the time (and in some cases distance) required to accomplish it.

    4.3. **Contingencies** – A route change that eliminates (or in some cases adds) at least one bonus point location dictated by your need to adjust your ETA to qualify as a finisher. Locations are prioritized according to their efficiency ratings, subtracted from (or added to) the route until the ETA to the final destination is back on target.

5. **Routing Tools** – If you expect any tools to be able to assist you in routing and make predictions with any reasonable expectation of accuracy, you will need to be both familiar with those tools, and have a history of tuning (or more specifically configuring or calibrating) those tools to match your rally riding pace. That means repeatedly planning and executing with those tools. Plan routes with your chosen tools and evaluate whether your predictions for performance on that route exceed or fall

short of expectations. The more data the better. In large metropolitan areas it is unlikely your tools will account for traffic congestion (either by day of week, or time of day).

Note: When comparing predicted vs. actual ride data, make no special pleading or excuses for underperformance. Use the opportunity to make your tools more accurate for you. How long does it take you to get home from work on a motorcycle as compared to your prediction using your routing tools? Estimate your route from your work-center to your garage or carport. Include in your estimate time to exit the facility, get geared up, exit parking, travel, and return into your neighborhood. Was the ride time accurately predicted? Was the off-saddle time accurately predicted?

Sun: "You said it would take 30 minutes." Ben: "I didn't account for traffic."
- from the TV Series "Lost"

5.1. **Non-Electronic**
    5.1.1. **Rally supplied maps** and directions or roll-charts - Put special consideration into any items supplied by the Rallymaster. Diversion or not, they have been pre-run and are more than likely supplied for your safety or to provide clarification.
    5.1.2. **AAA Maps** show distances between major junctions - Road speeds or time needed to travel are often not documented.
    5.1.3. **Thomas Brothers or other up-to-date local maps** are often handy in local rallies to locate bonii by address or get a quick detailed view in urban areas.
    5.1.4. Analog Distance Measuring (map wheeled-rulers) – Takes some practice. Better to get actual measured road distances.
    5.1.5. Compass – It never hurts to know at a glance which is the NW corner of an intersection.

5.2. **Mapping Software** – Most have relatively simple road ratings and do not account for variations in traffic congestion that may occur throughout the day or week.
    5.2.1. MS **Streets and Trips** – Sliders can modify relative road speed preferences. Can optimize route by letting software analyze most efficient sequence (save copy of route before optimizing in case result is not satisfactory to meet rally constraints).
    5.2.2. Garmin **MapSource** - Can modify specific road speed preferences.

5.3. **GPS –** ETA most accurate when GPS operating with street navigation software.
    5.3.1. Firmware on your GPS – Few or no controls for indicating your speed preference. You should have a good idea of how accurate the ETA function is for your riding style so you can factor it up or down appropriately during the final hours of a rally.
    5.3.2. In addition to your overall route, consider creating smaller routes that cover just a portion of your route – outbound, 1st half, return route, 2nd half, various contingencies. Smaller routes will load faster and recalculate faster (leaving you potentially 'navigation-blind' for a shorter period). Write the route names along with a description in your notes / decision-sheets for quick reference.

"Sometimes the road less traveled is less traveled for a reason." – Jerry Seinfeld

6. Basic Route Strategy

6.1. **Rule of Thirds**

    6.1.1. Plan to achieve the first half of your planned base route in one third of the time allocated.

    6.1.2. Upon completing the first half of your planned route you will either have two-thirds of the time remaining to complete the second half (and you may be able to hunt additional bonii), or if you have fallen behind schedule you can implement contingencies to 'straighten' the second half of your route (dropping off the least efficient bonii on the remaining route).

"By failing to prepare, you are preparing to fail." – Benjamin Franklin

6.2. **The Zig-Zag Return**

    6.2.1. This builds upon the Rule of Thirds and gives you options to get the most out of the second half of your course.

    6.2.2. If you find your route has a cluster of bonii or collection of locations on the first half of your route that require detours off an otherwise steady and predictable path (like a main highway or interstate), consider reversing your route and covering those locations in the second half of your route (depends on constraints).

    6.2.3. This does not mean put the twistiest road in the second half of your route. The 'zig-zag' implies that you have options to 'unzig' or 'unzag'; that is 'straighten' your return path and subsequently recover time.

    6.2.4. If planning time permits, mathematically rate each location in your 'zig-zag' for efficiency and prioritize them for elimination or addition to your return route. Include next to the rating the time you can recover from the elimination of each. This is crucial to implementing your contingency route and ensuring the best chance to achieve your ETA to qualify as a finisher.

    6.2.5. A route need not appear as a 'zig-zag' to have this benefit. Any cluster of bonii which has fairly quick access to a relatively direct path to the finish will have the same effect.

Note: Any Rallymaster worth his salt can design a rally that could eliminate the benefits of nearly everything I have advised you thus far in routing. Remember these are basic concepts to highlight the importance of gauging your planned route against your actual progress, and not locking yourself into a return route (or second half) in which you cannot recover lost time (or effectively shorten your remaining distance).

7. Stop Management – Some quick notes

7.1. Be as much an expert at 0MPH as you are at 15MPH or 60MPH.

    7.1.1. Beware that your intended stop location may not be obvious to other vehicles.

    7.1.2. As you slow down to find a location, other vehicles may misinterpret your maneuvers or misjudge your speed.

7.1.3. Select parking efficiently – surface/stability, safety/visibility, and exit strategy.

7.1.4. Don't ever block traffic or inhibit other riders from stopping safely at a bonus location!!

7.2. Don't forget to record or document the stop according to the rally rules:

7.2.1. Odometer

7.2.2. Time

7.2.3. Photograph (rally flag/number legible?)

7.2.4. Receipt

7.2.5. Signature, Stamp, or Answer to location question

7.3. Secure your safety gear before leaving:

7.3.1. Helmet/Chin-strap/Clean shield

7.3.2. Gloves/Jacket

7.3.3. Phone/Cameras

7.3.4. Connect or Stow Comm or Heated Clothing Wires

7.3.5. Tank-bag zippers or luggage clasps

Note: The more stops your route plan has, the more of an impact your stop management will have on your performance. For a typical rider, trying to make up for an extra 5-minutes stopped requires riding 20-30 minutes at 10MPH faster than planned to make up for the time. ***Stop efficiency, for what it's worth, is accomplished at a very safe speed!***

8. **Efficiencies – The Very Basics of an Advanced Topic**

8.1. **Points/Minute** – A simple formula, albeit the denominator is often a very imprecise prediction.

8.1.1. In a rally heavy on constraints, figure out the points/minute for the core route. For example the required course takes 6-hours to complete for a total of 6480 points. 6480/360 = 24 pts/min.

8.1.2. In a 'free-for-all' bonus hunting rally (one with few route constraints) it may be best to start by quickly eye-balling a few potential routes and quickly doing a points/minute calculation on each (don't forget to account for stop time). *As time permits* you can fiddle with the best one, or even try to beat it by testing some non-obvious routes.

8.1.3. In a rally with disproportionate point value locations (required checkpoints with no points, or 'de facto' checkpoints with huge points) don't expect additional bonii to match the core efficiency.

8.1.4. Whichever is easier – add bonus locations you wish to hunt one by one, or add as many possible to start with and subtract them one by one. At each addition or subtraction, note the change in your route efficiency (don't forget to account for stop time at each location). Rate the locations by how much their presence boosts your efficiency.

8.1.5. When you make major changes to your routes the efficiencies of each location may change (depending if they are now further off your main course).

8.1.6. If you are under a time constraint to evaluate the efficiency of your route, cluster several bonus locations together and add or drop them as a cluster or group.

8.2. **Points/Mile** – Similar to points per minute, in the case where there is a distance constraint.

Note: This is just the tip of the ice-berg regarding route analysis. The basic point is that two locations, both of the same value, both an equal distant detour from your main route; the one that is on the faster road and/or requires the least time at the stop to acquire is the most efficient in a timed rally.

"If you do not know where you are going, any road will take you there." - Sterling Holloway

9. **Contingencies – Notes and Decision-Sheets to Optimize your ETA**

9.1. Once you have determined the priority of dropping each bonus location, and how much time it will save on your final leg, carefully write that on a note or decision-sheet that you can reference on the ride. Information that is obvious to you in planning may be cloudy 6-hours later. In a perfect situation your contingency plan should execute like a flow-chart. If your goal is simply to return with time and points to qualify as a finisher it may only need a few options.

9.2. Rely on your pre-ride calculations. In the absence of new information, there is no reason to consider your judgment 6-hours into a ride will get any better. It is possible you might lose a chance to correct a mistake, but it is probably more likely you will compound an error.

9.3. Every moment you are not staring down at your GPS stats or trying to calculate routes on the fly is one more moment you can spot road debris or react to hazardous conditions. You will learn over time if you have the ability to solve complex problems after many hours on the road, but if you are like me you can relieve a lot of anxiety by whittling down the number of things you need to process on the ride.

Note: Implementing a contingency does not equate to failure in any sense. The route plan is just that – a plan. The route you actually complete is the correct one. Not implementing a contingency may mean you had the opportunity to get an additional bonus. The winner of a rally is the rider with the best score, contingency implemented or not.

"The rider who returns with the most points earns first place.
The rider who 'plans' to get the most points… their award is TBD"

10. **Squaring up for Scoring** – See 3.2 and 7.2 ; Remember all the efforts of the day are void if they aren't recorded accurately and completely. Don't leave points at the table!

11. **Conclusion** – Safety is the number one concern in any rally. Getting good at the planning process, managing stops, and implementing contingencies are far and above more significant than speed.