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KINJ

AL

SHAH

HAVEN IN THE MEADOWS





ACKNOWLEDGEMENT

I would like to thank my parents for their unwavering support through out my architecture education. I am grateful for their sacrifices, so that I could do my post graduation in United States. While doing this project, I started giving importance to my own mental health, there was a time where I was struggling to cope up with loneliness and grief from continous family health issues. But one thing I learnt is that caring about mental health should be priority. That's how I came so far and found contentment about my achievements.

I have always been in awe with Prof. Kirk Hamilton's work, his research work and professional experience guided me in understanding the plausibility of my project. I am honored to be your student. I have always been inspired to push my limits and think out of box through out my grad life because of Prof. Lu. I have always seen him as a cheerleader and motivator. For Carly, I would say she has been such a great contributor to this project through her knowledge of psychology. Though my second year was bit different, but Prof. Ray made sure that our in studio and virtual studios were the most learning experiences. His attention to detail and motivation to be "over achievers" always kept us on toes to be the best.

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> Zhipeng Lu, Ph.D., LEED AP BD+C (Committee Member)

> > Carly McCord, Ph.D. (Committee Member)

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TABLE OF CONTENTS





COMPLEXITY OF BEHAVIORAL HEALTH 3.1 WHAT IS BEHAVIORAL HEALTH? 3.2 TREATMENT AND WELLNESS





SITE & FACILITY

5.1 SITE5.2 PROGRAM5.3 PROCESS WORK5.4 FINAL DESIGN5.5 DETAILS







PERSONAL SPACE



INTRODUCTION

SHIPS SELF HARM SISINO PSYCHOLOGY SUICIDE SEARCH AWARENESS 🏠 WELLINESS HEAD Z GRIEF WORRIED NN THERAPY A R **TRA POST-TRAMATIC STRESS** CHOLOGICAL ALTH BEMOTIONS DRUGS GENETIC E COGNITIVE DEPRESSION EMOTIONS ULAR L GENETA STRESS JUNILO *FREATME* AT UNHAPPY

1.1 ABSTRACT

This project began with an investigation about creating an environment that facilitate the healing process for mental health patients. The state of mental hospitals in current scenario lacks the continnum of care. To fill this gap of care, this project caters to the need of behavioral health facilities from acute care to residential treatment.

In today's scenario, the need for mental health services have increased. The attention to overall health can only be achieved if both physical and mental health are taken care. There are many counties in United States which lack basic mental health services. This project is located in Larimer County, Colorado, the county lacked any behavioral health services for its residents. Hence the need for facility was evident. With this intention, the "Larimer County Community Master Plan for Behavioral Health: Changing the Paradigm" was created to comprehensively evaluate the behavioral health services and outline a Five Year Strategic Plan to address them.

The project consists of 16- bed unit cluster each for acute mental health patients, substance use, outpatient facility and residential treatment. The design is based on principles of biophilic design and salutogenic approach. The research carried out for this project aims to identify the design guidelines to explore how architecture can be of aid in relieving psychological disorders by promoting a eunoia state of mind. The planning process was more focussed on creating secured and non secured environments without a physical barrier and facilitating spacial orientation in more natural way.

The investigation ahead will act as toolbox for designing behavioral health facilities with new outlook. The environment around the facility gives the patient a sense of coherence and choice control leading to feel more like home. At the end, the architecture needs to be make a person believe that this mental and behavioral disorder can be controlled and this place will heal them. **Hence the facility is a " Haven" for all the patients to give them new life purpose and the zen to feel "Eunoia".**









1.2 PROBLEM STATEMENT

Stigma associated with mental health is very common. Apprehension of treatment is the fear of mental health services, which avoids patients to take treatment. The fear of stigma is more associated with facility itself, the mental health hospitals are symbolized more of an incarcenation centers rather than a healing place. Despite all improvements introduced to mental health facilities, they are still labelled and stigmatised. Mental health facilities are often associated with a penitentiary, an asylum, or a substitute of a panopticon. The stereotypical image of a psychiatric hospital is inseparably linked with this object.

The architecture of psychiatric hospitals is sometimes referred to as the architecture of madness. That applies to both the architectural form and the quality of the built environment. Very often, architecture not only fails to guarantee appropriate conditions of stay, but it is also inadequate for its function. Some mental health facilities were not adapted to the changing requirements for healthcare facilities, and in some cases they were not designed to accommodate people. That creates inappropriate spatial and functional connections and results in inability to introduce required changes, provide particular technical conditions, and create a suitable healing environment for patients.

The task of reducing mental health stigma associated with the place (architecture) necessitates considering a wide range of diverse issues. To meet standards of quality for mental health facilities, the space need to ensure the protection of in-patients' dignity and privacy while maintaining security, as well as appropriate humanisation of hospital space with respect for local and cultural determinants. This allows focusing on the patients and facilitates their engagement on a personal and social level while appropriate therapy is being carried out.

The enviroment should be welcoming so that care can be given without any judgements. Mental health architecture should be neither the architecture of madness nor the architecture of stigma, but an architecture of therapy, humanity, empathy and safety.





CHOICE OF SOCIAL INTERACTIONS

OBJECTIVE & PURPOSE

2.2 PROJECT PLAN

Purpose & Aim:

The purpose of the project is to examine how design can improve the mental state of patients or aid the process of healing. The focus will be on how spatial planning and certain design features can be used to improve the state of well being.

Facility as a hub for eunoia:

The state of mental wellness just doesn't come with the temporary care it needs different levels of care at different stages of mental and behavioral state. Hence to fulfil all these stages a continuum of care needs to be established. This project will cater to all those needs by providing a complete care from inpatient care to residential supportive treatment along with social interactive activities.

Users:

The facility will have patients with mental and substance abuse disorders. Its an adult only behavioral health facility with services ranging from outpatient detox care and emergency department. The community will use be part of this facility for group therapy and well-being.

The plan:

A regional health facility which is like a hub for Larimer County ensure seamless care coordination and fill in critical gaps in the continuum of care for those experiencing crisis and substance use disorder issues. A place where education, health& wellness and early identification and intervention is encouraged. Design strategies include outdoor courtyards, views to nature, ample of daylight, form that creates passive secured barried for spaces that needs security The program has various common spaces for small and large groups. The inpatient units have combination single and double occupancy which helps in staff efficiency and also fulfils the cost restrains for the per bed. Can architecture heal?

> How can people be bought together in a pleasant environment and engage in beneficial interactions?

> > What are the relevant design strategies employed in creating a healing environment?

Who is it for?

2.1 FRAMING THE ISSUES

Behavioral health issues are complex diseases that require individualized treatment approaches tailored to the person's severity of disease and specific health care needs, just like any other chronic health condition. This requires a system of care that has a range of levels and types of care available to appropriately meet the needs of patients accessing the system. When appropriate levels of care are not available, individuals often go untreated or receive limited or fragmented treatment, resulting in the utilization of more costly services in hospitals, emergency departments, crisis care, and the County jail.

Understanding the need for passive privacy:

Every patient has been diagnosed with mental health disorder or substance abuse. These patients have tendency for harmful behavior like suicide and self harm. For this purpose, a continous supervision is needed to track their behavior, this supervision needs to be indirect and open so that patients and staff are comfortable with each other.

Understanding the need to reduce aggression:

Most patients feel that mental health facility can harm them and hence they become aggressive. The environment needs to portray calm and positive elements which helps in reducing aggression. Thus, the harmful behavior is controlled.

Understanding the need for psychological sensories :

The space around them can give behavioral cues, these cues should help in giving comfort, social choice and control. The environment needs to be designed to give positive distractions which would help in diverting the mind from illness to wellness.

Understanding the need for safety :

The harmful behavior can not only affect fellow patients but also to staff. Hence the environment needs to display safe materials and furniture so that objects for violence is reduced. The balance between patient and staff common spaces should be ligature resistant and free from any display of inappropriate art.













SPATIAL ORGANIZATION MERGING WITH HUMAN SENSORIES



COMPLEXITY OF BEHAVIORAL HEALTH

3.1 BEHAVIORAL HEALTH vs MENTAL HEALTH

The term "behavioral health" originated just a few decades ago, but the meaning has changed over time. There are several important differences between mental and behavioral health.

Mental health is a state of wellbeing in which an individual can cope with stress and be a productive member of the community. Your biology, habits and psychological condition all impact and are impacted by your mental health. Depression, generalized anxiety disorder, bipolar disorder and schizophrenia are all examples of mental health disorders that are not directly a result of behaviors. While some mental health challenges are related to behavioral health, others are caused by genetics or brain chemistry.

Behavioral health is the way your habits impact your mental and physical wellbeing. That includes factors like eating and drinking habits, exercise, and addictive behavior patterns. Substance abuse, eating disorders, gambling and sex addiction are all examples of behavioral health disorders. These conditions stem from maladaptive behaviors and may require behavioral health services to overcome.

People who have substance use disorders as well as mental health disorders are diagnosed as having **co-occurring disorders**, **or dual disorders**. This is also sometimes called a dual diagnosis.





1 in 3 adults in America suffering from mental illness do not undergo treatment



mental health and addiction disorders



3.2 TREATMENT AND WELLNESS

1. Psychotherapy - Its also known as "talk therapy" has to be specially tailored around the patient's anxieties in order to be effective. Cognitive Behavioral therapy (CBT) is a type of psychotherapy that encourage the patients to find different ways of thinking, behaving, and reacting to anxiety-producing and fearful situations. CBT is composed of cognitive therapy which is used to identify the problems and exposure therapy which represents confronting the fears, CBT is done individually or with a group of people and usually requires some "homework" to be done.

2. Self help or Support Groups - Some people will benefit from these group meetings as sharing their problems and achievements can be deeply satisfying . Group meetings, support groups and chat rooms, even talking to trusted friends can have a beneficial impact on one's mental health.

3. Dialectal Behavioral Therapy (DBT) - DBT can be adapted for many substance abuse cases, but mainly focuses on treating severe personality disorders, such as borderline personality disorder. DBT works to reduce cravings, help patients avoid situations or opportunities to relapse, assist in giving up actions that reinforce substance use, and learn healthy coping skills.

4. Stress Management Techniques (SMT)- SMT and meditation can help people with anxiety disorders, calm themselves and may enhance the effects of therapy.



2 - 7 7 - 10 10 - 13 13 - 17 17 17 - 22 22 - 31 31 - 52



Adults With Serious Mental Illness 3.05% - 3.46% 3.46% 3.86% 3.86% 4.12% 4.12% 4.41% 4.41% - 4.8% 4.8% - 5.13% 5.13% - 5.45%



Support Group



Dialectal Behavioral Therapy (DBT)



Stress Management Techniques (SMT)







ACCESS TO NATURE



INVESTIGATIONS

4.1 CASE STUDY



Lindner Center of Hope

Location : Cincinnati Area: 93,890 sq.ft Beds: 64 single inpatient rooms, 16 bed division Form Inspirations Taken: -Spine connecting wings. -Connection to nature. -Downtown/Neighborhood/ Housing Concept. -Secured Courtyard between the building. -Rooms facing the woodlands.



Tampere Psychiatric Clinic

Location : Tampere, Finland Area: 122,917 sq.ft Beds: 180 single inpatient rooms, 15 bed division Form Inspirations Taken: -Multiple Courtyards with different uses -Connection to nature -Distinct Entries to create sense of arrival -Window Style. -Rooms facing the courtyards.



Vejle Psychiatric Hospital

Location : Vejle, Denmark Area: 353,473 sq.ft Beds: 91 single inpatient rooms, 15 bed division Form Inspirations Taken:

- -Multiple Courtyards
- -Square shaped units
- -Downtown/Neighborhood/ Hous-
- ing Concept. -Rooms facing the courtyards and
- woodlands.

4.2 RESEARCH

Evidence- Based Design:

A deliberate attempt to base the building design decisions on the best available research evidence with the goal of improving outcomes and of continuing to monitor the success or failure for subsequent decision making.

RESEARCH GOAL 1

Improving the patient safety through environmental measures

-Reducing Patient injury and comorbidity -Reducing medical errors -Reducing Healthcare- acquired infections

RESEARCH GOAL 2

Improving other patient outcomes through environmental measures

-Considering Patient's social choices -Reducing depression and anxiety -Reducing spatial disorientation -Improving patient privacy

RESEARCH GOAL 3

Improving staff outcomes through environmental measures

-Decreasing staff injuries -Decreasing the staff stress -Improving patient-staff communication

Salutogenesis:

A holistic approach towards healing process in all dimensions of a person – body, mind, social and spirit. To achieve this four factors of environment are considered:

Internal Environment

Healing intention and personal wholeness are crucial for significant impact on health creation & wellbeing

- Creating an environment where mind, body and spirit is connected to the environment.

Behavioral Environment

Healthy lifestyles and integrative care to promote the healing process

- Creating spaces that match with an individuals person choices and creates an improved lifestyle.

External Environment

Healing spaces with ecological sustainability and resilience for supporting the healing process

- Creating an outdoor environment which helps in the healing process by horticulture therapy or group therapy

4.3 CONNECTION TO PLACE

To translate the research into a built environment, a visioning process is determined to conclude the design strategies. This visioning process aims in imagining an environment that could check all the research goals and creates a salutogenic environment.



Defining the design strategies (blue boxes) in relation to patient/staff outcomes (grey boxes).

4.4 DESIGN GUIDELINES



Conceptual ideas to define the well- being of spatial relations



Understanding the Behavioral Psychology and defining the space relation



HOME-LIKE ENVIRONMENT



SITE & FACILITY

5.1 SITE LOCATION & ANALYSIS

National and local statistics indicate that one in five Americans has a mental health issue, and depression is the leading cause of disability worldwide. It is estimated that 41,000 Larimer County residents have a mental illness and 30,000 have a substance abuse disorder (some residents have both conditions). Larimer County holds one of the highest suicide rates in the country. While the County has many solid services, it does not currently have the continuum of care needed to meet differing severity and scope of needs. It also lacks a centralized facility where care can be effectively and efficiently managed in a continuum of care. A 2015 study of Larimer County Jail frequent utilizers (those booked four or more times in a year) found that 9 in 10 had substance use problems and half had a mental illness.



Population with Co-occuring - 15,000





Land use context around the site



Natural surrounding context



Transportation Connectivity



Satellite site image



Site view 1



Site view 2

5.2 PROGRAM

Cluster 2 – total beds 16 +16

Unlocked unit		re Residential Treatment (IRT): 30 days total inpatient care for patients with mental health diagnoses.
	Internatio	NON-SECUR Cluster 3 - total beds Cluster 3 - total beds
1		SECURE
Soft locked unit		Managed Withdrawal Management: short-term (3-5 days total) care for patients who mostly require n while detoxing
		Cluster 1 – total beds 16
locked unit		tabilization Unit (CSU): short-term (less than 5 days total) inpatient care for patients suffering an ental illness.
Completely		ly Managed Withdrawal Management (MMWM): short-term (less than 5 days total) inpatient care for requiring medical assistance in their detox efforts



Patient Entry

Diagram showing flow of patient through secured and non-secured environments

5.3 PROCESS WORK





DESIGN OPTION 1

PROS:

- Central axis form creates a seperation between secured and non-secured
 - environments.
- The courtyards with the spine facilitates the spatial orientation
- Single- story form

CONS:

- The rectangular form of housing units creates negative spaces for supervision from staff area.
- All the inpatient room don't get hill views .

MODIFIED FURTHER





DESIGN OPTION 2

PROS:

- The courtards and spine work good for creating secured corridors.
- V-shaped housing unit gives hill view to maximum room

CONS:

- Open plan in housing not achieved.
- V-shape creates negative spaces for supervision from staff area.
- Two-storeyed.
- Long corridors.
- No passive seperation of secured and nonsecured environments.

REJECTED





DESIGN OPTION 3

PROS:

- Dynamic form
- Housing plan with central supervision of nurse station

CONS:

- Spatial orientation not formed.
- All the inpatient room don't get hill views.
- Two-storeyed
- Courtyard not secured well
- Home-like form not achieved.





PART- DIAGRAMS



Divide & Add Divide the mass and add the secured courtyard in between

Intersect & Elevate Intersect the mass between the other mass to elevate the entry



Downtown

Housing

Neighborhood

SITE PLAN



<u>5.4 FINAL DESIGN</u>



DOWNTOWN					
	Total NSF	NTG	Departmental GF		
1. Care Coordination	940	25%	1175		
2. Triage + Secure Entry	4446	30%	2691		
3. Administration	1730	25%	2162.5		
4. Food Services	2305	15%	2650.75		
5. Pharmacy	350	15%	3847.9		
6. Staff Entry	2070	30%	2691		
7. Building Support	3346	15%	3847.9		
NEIGHBOURHOOD					
	Total NSF	NTG	Departmental GF		
8. Community Hall (on mezzanine level)	1510	30%	1963		
9. Large Group therapy room	510	30%	663		
10. Courtyards	2000	30%	2600		
11. Family Visitation	460	30%	598		
HOUSING					
	Total NSF	NTG	Departmental GF		
12. Medically Managed Withdrawal Unit	4724	40%	6613.6		
13. Crisis Stabilization Unit	4724	40%	6613.6		
14. Clinically Managed Withdrawal Unit	4724	40%	6613.6		
15. Intensive Residential Treatment Unit	4434	40%	6207.6		
Total Departmental Gross Square Feet					
Building Gross Factore					
Total Building Gross Square Feet					



Haven in the Meadows



Waiting area view facing towards group therapy courtyard with ample of daylight and visual access to nature for calming environment

DOWNTOWN





De-institutionalized & Homelike environment



Environment



access to nature

1. Entrance lobby 2. Pharmacy

- 3. Cafe
- 4. Kitchen
- 5. Storage
- 6. Soiled
- 14. Loading/Unloading 15. Staff locker/change 7. Clean and store 16. Medical gas storage

10. Housekeeping

11. Power Room

12. Water pump room 13. Boiler Room

- 8. Sorting 9. Mechanical Room







View of Group therapy courtyard between the downtown and housing units, the group therapy courtyards are meant for casual counselling between the patient and care giver. An open outdoor space helps in reducing the anxiety and aggression.

Access to spaces for public, staff and patients from CMW



NEIGHBOURHOOD



unit and IRT unit



Social Dynamics: Choice of Large or private space for family visit



Analogy to Everyday Life:

Connection to housing



Edge Conditions: Group closer to non secure and transitional housing units





View of Group therapy courtyard between the downtown and housing units, the group therapy courtyards are meant for casual counselling between the patient and care giver. An open outdoor space helps in reducing the anxiety and aggression.

HOUSING





Access to spaces for staff and patients from CMW unit and IRT unit

Social Dynamics: Choice of Single or double patient rooms

Analogy to Everyday Life:

Front yard and Backyard

concept, Open plan



Edge Conditions: Small Alcoves between rooms. Choice of informal space – quiet room, seating and activity area.



- 9. Nourishment 10. Medication 2. Single Patient Room
- 11. Storage 3. Double Patient Room
- 4. Quiet Room
- 5. Nurse Station
- 6. Small Activity Room
- 5. Small Activity Room 14. Storage
 7. Detox Bays Open and 15. Staff lounge Enclosed
- 16. Seclusion room 8. Clean/soiled Utility

12. Day Room

13. Exam room/

Counsellingroom



Haven in the meadows | 47



SECTION



Downtown



Access to spaces for,staff and outpatients and emergency patients for CSU and MMW



Environment



De-institutionalized & Homelike environment



Visual and Physical access to nature



Administrative and Staff support

- Waiting Area
 Administrative office reception
 Conference Room
 Workstations
 Clinical Director
 Executive Director
 Facility Director
 Medical Director
 Storage
- 10. Pantry
- 11. Consult Rooms

Care Coordination

12. Workstations 13.Consult rooms

Secure Entry

- 14. Sally Port
- 15. Legal processing
- 16.Seclusion Room
- 17. Seclusion Toilet
- 18. Debug/furnace room
- 19. Storage
- 20. Secured Lobby 21. Transport lounge
- 22. Secured Entrance Vestibule

Triage

23. Consult/ Hot Office Room
24. Exam Room
25. MH observation room
26. Bull pen space
27. Nurse Station
28. Patient Effects Storage
29. Toilet
30. Documentation
31. Medication
32. Clean/soiled Utility
33. Nourishment
34. PPE storage
35. Lab
36. Reception



Housing







SECTION



INPATIENT ROOM DESIGN



of the wall to soften



Double inpatient room view

- tamperproof material

Health Patient Room Mockup at a VA Facility. HERD. 2020 Apr;13(2):46-67. doi: 10.1177/1937586719856349. Epub 2019 Jul 15. PMID: 31304785.



Single inpatient room view





A TRANQUIL END TO THE JOURNEY.....



ing Ray

5.5 DETAILS



BUILDING ENVELOPE AND STRUCTURE



DETAIL

In order to maintain the sloping roofs in central axis mass, Displacement Ventilation is used to have all the mechanical ventilation from plinth and ground. DV provides better acoustics and better air quality than mixedflow systems. Mixed-flow systems tend to be louder because of the higher velocity required from diffusers. Lower supply velocity at diffusers means lower pressure drop, smaller fans, and less energy consumption. Fan horsepower reductions can be attributed to less air movement.

DV can use fewer diffusers and less ductwork. DV introduces supply air at the playing/teaching floor, improving indoor air quality by reducing accumulation of CO2, odor, and indoor contaminants. DV has a higher ventilation effectiveness than mixed-flow systems. If 100% outdoor air and exhaust is used, the heat gain due to the lights and roof can be eliminated from building cooling loads.



Source: www.bsria .com



70 | Haven in the meadows







DETAIL AT 'B'



STAIRCASE DETAIL



KEY SECTION







STAIRCASE PLAN

PART SECTION





WALL DETAIL



Haven in the meadows | 73



A PLACE TO FEEL NORMAL



CONCLUSION



This project de-stigmatizes the way we look at mental health care, a place where all the levels of care given and designing the spaces not just focuses on all the users. The concept of patient-centered care has taught us, such as incorporating natural light, ensuring views of nature, providing access to the outdoors, offering a choice of one activity room or another, and offering a choice of where to sit in public rooms, such as by a window or in a quiet alcove. When people have a choice of where to be, they are less likely to become dangerous to themselves or others. The design strategies act as a toolbox for future projects and it will change the state of facility across the world. At the end, this project solves the question-

"How can architecture for behavioral health envisioned in future?"



GLOSSARY

1. Addiction or Substance Use Disorder – a primary, chronic disease of brain reward, motivation, memory, and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social, and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors.

2. Behavioral Health – includes not only ways of promoting well-being by preventing or intervening in mental illness such as depression or anxiety, but also has as an aim preventing or intervening in alcohol/ substance abuse or other addictions.

3. Continuum of Care (Levels) – a system that guides and tracks patients over time through a comprehensive array of health services spanning all levels and intensity of care.

4. Co-Occurring Disorder (Dual Diagnosis or Co-existing) – refers to an individual who has a co-existing mental illness and a substance-use disorder, or another combination of disorders (such as mental disorders and intellectual disability).

5. Crisis Stabilization Unit (CSU) – within a behavioral health facility, a level of care and services provided for individuals to receive crisis stabilization services in a safe, structured setting.

6. Clinically-Monitored Withdrawal Management (CMWM) -This unit provides short-term (3-5 days total) care for patients who mostly require supervision while detoxing. This unit complies with the ASAM criteria 3.2WM. This unit has fewer bedrooms but includes smaller spaces for detox similar to a "Sobering Unit." 7. Eunoia - It means "well mind" or "beautiful thinking". It is a rarely used medical term referring to a state of normal mental health.

8. Intensive Residential Treatment (IRT)- This unit provides up to 30 days total inpatient care for patients with mental health diagnoses. This unit complies with the ASAM criteria 3.5 and is intended to be "soft locked". If a patient has dual diagnoses (mental health and substance abuse disorder), they may stay in the IRT up to 90 days.

9.Medically-Monitored Withdrawal Management (MMWM)- This unit provides short-term (less than 5 days total) inpatient care for patients requiring medical assistance in their detox efforts (that is, using drugs to aid in detox with a severe alcohol, benzodiazapine, or heroin/other opiates addiction).

10. Mental Health – It includes our emotional, psychological, and social well-being. It affects how we think, feel, and act. It also helps determine how we handle stress, relate to others, and make choices

11. Triage – The process of determining the priority of patients' treatments based on the severity of their conditions.1

12. Wellness – The quality or state of being healthy in body and mind, especially as the result of deliberate effort.

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